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Changing People's Perceptions and Behavior Through Partnerships and Education: Followup on a Case Study from Minnesota

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Changing People's Perceptions and Behavior Through Partnerships and Education: Followup on a Case Study from Minnesota

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Executive Summary

In 1994, the Minnesota Department of Natural Resources (MN DNR) initiated outreach programs to citizens and local units of government in a six-county area of southeastern Minnesota. One product of this outreach effort was the Well Creek Watershed Partnership. The Partnership used a comprehensive watershed management planning process to develop "desired future conditions" for the watershed. An action plan was developed to identify and initiate actions that would move the watershed toward conditions resulting in benefits such as improved biological diversity, hydrology, and water quality while maintaining agricultural profitability and enhancing the rural community.

Prior to initiating Partnership activities, MN DNR and USDA Forest Service North Central Research Station staff surveyed residents of southeastern Minnesota to determine their perceptions of environmental and land use issues, and the activities they engage in to affect environmental quality. We sampled the residents in such a way that we could compare responses from landowners in different places: (1) the Wells Creek watershed, (2) bluffland counties (Goodhue (minus the Wells Creek watershed residents), Wabasha, Olmstead, Winona, Fillmore, and Houston Counties), and (3) other southeastern Minnesota counties (Rice, Steele, Dodge, Freeborn, and Mower Counties) (fig. 1). The Wells Creek watershed is relatively small—52,000 acres. The size of the watershed is viewed as ideal for a project such as the WCWP that operates in a community setting and uses demonstration projects and public awareness campaigns to promote comprehensive watershed planning.

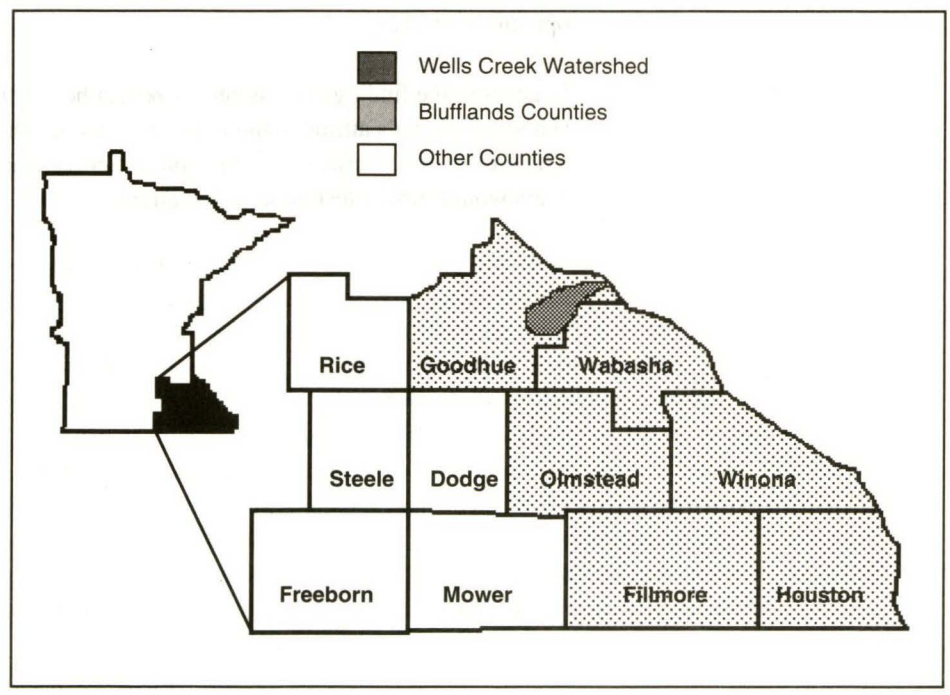

Figure 1.—Map of southeastern Minnesota counties.

The results of the 1994 survey were made available to the public through Partnership meetings and newsletters and were published as a technical report (Kelly and Sushak 1996). In the spring of 1999, we re-surveyed residents of Wells Creek and the region in an attempt to measure and analyze any changes in their thinking and behavior during the first 5 years of the Partnership. We were particularly interested in any divergences in thinking and behavior between Wells Creek and the neighboring places, divergences that might be associated with Partnership activities.

We found very few changes in people's perceptions, opinions, and behaviors between 1994 and 1999—their thinking and behavior were remarkably stable over time and between places. Changes that did occur tended to bring the responses of landowners in the bluffland and other southeastern Minnesota counties closer to those in Wells Creek—homogenizing views and actions. Most of the change that occurred between years was found in the severity of an issue or concern. In general, issues decreased in severity—issues were seen as less of a problem in 1999 than in 1994. The largest decrease in severity was observed in the category "job opportunities." This decrease in concern about jobs reflects the overall health of the economy in Minnesota and nationwide. Few issues increased in severity; one notable exception was "expansion of housing development into rural areas." Again this issue reflects a concern that has been growing not only in southeastern Minnesota, but also throughout the Midwest. This concern about sprawl and parcelization of rural areas was also reflected in a series of questions asking residents whether they would like to see about the same area, less area, or more area of specific existing landscape conditions. People indicated that they would like to see significantly less "area of new residential development in rural areas" and "area of new light industrial development in rural areas."

In general, the findings of this survey reflect how difficult and slow the process of changing people's attitudes and behaviors can be. This is especially true in regions where there are no crises to call people to action. Repeating this survey in another 5 years would further test these observations.

Introduction

To what extent do education and outreach activities initiated by land management agencies change the thinking and behavior of citizens? A study of residents in southeastern Minnesota after the first 5 years of a comprehensive watershed management project found very little change in perceptions or behavior in five areas:

1. local environmental and land use concerns,
2. sources of information about land use and the environment,
3. actions people take to affect environmental quality and land use,
4. attitudes about the environment and environmental management, and
5. future environmental conditions people desire.

In the early 1990's, the Minnesota Department of Natural Resources (MN DNR) adopted an ecosystem-based land management philosophy. One activity promoted under ecosystem-based management was comprehensive watershed planning. Comprehensive watershed planning engages citizens and other interested parties in partnerships to maintain or improve the ecological health of a watershed. Watersheds are the focus because water flowing through that landscape ties together the soils, vegetation, animals, and people; and every activity within that landscape has the potential to affect the entire watershed.

As part of the ecosystem-based management initiative in southeastern Minnesota, the MN DNR established an outreach program to citizens and local units of government in a six-county area (the bluffland counties in figure 1). One product of that outreach effort was the Wells Creek Watershed Partnership (WCWP), which would be used as a test site for comprehensive watershed planning. Most specifically, the purposes of the WCWP were to (Minnesota Department of Natural Resources 2000):

1. initiate a comprehensive watershed management planning process;
2. use public involvement and a jointly developed "desired future condition" as a means of integrating ecological, social, and economic values within the watershed; and
3. implement watershed goals to improve biological diversity, hydrology, and water quality while maintaining agricultural profitability.

In the Wells Creek watershed of southeastern Minnesota, gently rolling uplands in the west give way to steep bluffs and forested hillsides as you move east. Where these steep lands intersect the valley floor, springs denote the beginnings of Wells Creek. Tributaries, springs, groundwater, and runoff contribute additional flow to Wells Creek as it winds 18 miles through the valley to its mouth at the Mississippi River in the historic village of Old Frontenac. (Robbins 1996). A watershed the size of Wells Creek is small enough that a sense of community can exist. Residents, potential partners in the planning project, know the area and their neighbors. Peer pressure is fairly effective in a watershed this size—people are more willing to make changes if they know others are doing so. On a practical note, a small watershed means that participants can easily travel to field demonstrations and meetings.

Before initiating the WCWP, staff of the Southeastern Region (Region V) of the MN DNR and the USDA Forest Service North Central Research Station (NCRS) developed a survey instrument that would provide a snapshot of local issues and concerns. MN DNR staff and WCWP members would use survey data to develop WCWP programs and activities. But the survey also served a longer term purpose. Survey findings would serve as baseline data to evaluate any changes in residents' perceptions or behaviors that could be attributed to WCWP activities after 5 years of implementation.

To increase the survey's usefulness as an evaluation or monitoring tool, its five areas were developed to provide information relevant to the three purposes of the WCWP. If the Partnership were to be successful in implementing a comprehensive watershed management planning process, information on local residents' attitudes about the environment and environmental management would be critical. In addition, information about where people go to obtain information about the environment and land use could help the Partnership spread the word about planning goals, processes, and activities. If the Partnership were to succeed in developing "desired future conditions" as part of the watershed management processes, information about future conditions residents would like to see would be useful as a starting point for discussions. Finally, if the Partnership were to be successful in implementing watershed goals to improve ecological conditions, information about local environmental and land use concerns would be important as well as an understanding of activities the residents currently engage in to affect environmental health.

The 1994 survey results were made available to the public through WCWP meetings and newsletters and were published in a technical report (Kelly and Sushak 1996).

In the spring of 1999, we re-surveyed residents of Wells Creek and neighboring regions in an attempt to measure and analyze any changes in their thinking and behavior during the first 5 years of the project. Our findings are presented in this report. After a brief discussion of methodology, we describe WCWP activities from 1994 through 1999. The discussion of findings focuses on comparisons between residents' responses in 1994 and 1999, and between Wells Creek residents' responses and responses from residents of neighboring counties (fig. 1). A comparison between places is an effective way to assess whether changes are specific to Wells Creek residents or are of a more general nature. We are particularly interested in any divergences in thinking and behavior between Wells Creek and the neighboring places, divergences that might be associated with the presence of the watershed project.

The survey was administered by the MN DNR and analyzed by staff of the MN DNR and NCRS. The MN DNR and NCRS jointly funded the project.

Methodology

We used the same survey in 1999 as we used in 1994. For this reason, we did not pretest the survey. Surveys were mailed to the full sample in April 1999. They were re-mailed in May and June to people who had failed to respond to earlier mailings. The sample was stratified by three geographic places, and results are summarized according to these three places: (1) Wells Creek watershed, (2) bluffland counties, and (3) remaining counties in southeastern Minnesota (fig. 1). Wells Creek residents were identified from county land assessor records, and every Wells Creek residential property owner received a survey. For the latter two areas, a sample of names and addresses was purchased from Survey Sampling, Inc. Names were systematically selected from a zip code sorted file. Wells Creek residents also in the bluffland county sample were excluded from the bluffland sample.

The sample size was 510 for Wells Creek and 1,000 each for the other two places (table 1). The return rate was 53 percent for Wells Creek and 47 percent for the other two areas, a rate typical of a general population survey of this type.

Because the sampling rates in the different areas were not the same, survey results were weighted by the number of property owners in the Wells Creek watershed and by the number of households (Minnesota Planning State Demographic Center 1998) in the other two areas. Weighting ensures that responses from an area are appropriately represented when combined with responses from a different area.

A response rate as low as the ones obtained in this study would generally call for a test of nonresponse bias. However, we did a nonresponse bias test with the 1994 survey and found that there was no non-response bias—the mail respondents generally represented the opinions of all the residents in the target area. Because we found no non-response bias in the earlier survey, we assumed that we would not find a bias in the 1999 survey and did not test for non-response bias.

Wells Creek Watershed Partnership Activities

The Wells Creek Watershed Partnership was established to bring together watershed residents and local government and state agency representatives to develop a plan outlining how the land and water resources of the watershed should be managed to maintain ecological integrity (Wells Creek Watershed Partnership 1995a). The Partnership's current organization includes a volunteer steering committee, an elected board of directors, and a technical committee.

Originally the steering committee was the primary mechanism through which residents could participate in the Partnership. Membership on the steering committee is open to anyone living in the watershed. This group of volunteers, participants in a series of open houses, and members of a technical committee provided input that was brought together into a vision for the future. Group discussion led to the development of goals and action steps. In 1998, the Partnership sought non-profit status, which required the establishment of a five-member board of directors. The board of directors now serves as the Partnership's governing body. The steering committee continues to meet regularly to ensure that the residents of the watershed have an avenue for participation and a forum for discussion. All meetings of the board of directors and steering committee are open to the public. The steering committee met 36 times during 1994-1999 to consider Partnership business. An average of 12 people attended these meetings, the vast majority of whom were the same from meeting to meeting. The steering committee also hosted annual volunteer recognition and Partnership celebration meetings. These annual meetings had an average of 40 participants.

The technical committee is made up of individuals from a variety of local, State, and Federal government agencies. These experts serve as resources that the steering committee and board of directors can draw on for information or other assistance. Members of the technical committee are also responsible for organizing technical data on watershed resources, and developing baseline information for the long-term evaluation of trends (Wells Creek Watershed Partnership 1995b). Examples of baseline information of interest to the steering committee include data collected and evaluated by University of Minnesota students to develop a stream temperature model and by a St. Mary's University student to implement a geographic information system (GIS) land use/hydrology model. The technical committee held 14 meetings over the 5 years in consideration. Technical and steering committee meetings covered a broad range of topics including biological indicators of ecosystem health, trout stream designation for Wells Creek, local geology, planting of native prairie grasses, and forest management.

The Partnership established a network of volunteers to participate in a variety of projects including tree plantings, streambank stabilization activities, rehabilitation of a civilian conservation corps structure, and monitoring of ecological conditions in the watershed. Volunteers monitored conditions such as stream temperature, stream stage, transparency, and aquatic macroinvertebrate populations.

One Partnership activity touched all Wells Creek watershed residents—publication of the WCWP newsletter, which was mailed to every household in the watershed. Fourteen issues were published from 1994 through 1999. A content analysis of the newsletters found that many newsletter issues (two-thirds) contained information on the operation of the Partnership, including the work of the steering committee and progress on Partnership goals. Many issues also contained a calendar of events relevant to Partnership activities and interests. Half the issues announced opportunities for landowners to obtain financial assistance or free materials for land restoration. Every newsletter contained some kind of educational article. The topic covered most frequently (in six issues) was trout stream designation. Other topics that appeared in more than one issue of the newsletter included watershed history, GIS applications and uses, use of native plants in land restoration, land use planning, soil preservation and conservation, and streambank stabilization.

The activities of the Partnership were unique to residents and households of the watershed. The purpose of this followup survey was to test whether there are differences between the current perceptions, preferences, and activities of Wells Creek residents and those of residents of other southeastern Minnesota counties. If differences were found, our goal was to link them to activities of the WCWP.

Findings

Findings are organized by topic:

- local environmental and land use concerns,
- sources of information about land use and the environment,
- actions people take to affect environmental quality and land,
- attitudes about the environment and environmental management,
- future environmental conditions people desire.

Within each topic, we're interested in answering three questions:

1. Are the responses given by residents of a place (Wells Creek, bluffland counties, or other counties) different in 1999 than they were in 1994?
2. Are the responses given by residents of a place (Wells Creek, bluffland counties, or other counties) different from the responses given by residents of all places in 1994 or in 1999?
3. Were the changes in responses given by Wells Creek residents unique to that place, or did similar changes occur in other places?

Severity of Environmental and Land Use Concerns

People were asked to rate the severity of 15 environmental and land use concerns where they live. The concerns were (listed in the order they appeared in the questionnaire):

- Water quality of streams, rivers, and lakes
- Groundwater quality
- Frequency and extent of flooding
- Loss of wetlands
- Soil erosion
- Quality of fish habitat
- Quality of wildlife habitat
- Woodlands and other natural communities occurring only as small scattered areas
- Expansion of housing development into rural areas
- Job opportunities
- Way in which public lands are managed
- Availability of incentives for private landowners to adopt practices that benefit the environment
- Coordination among public programs to provide assistance to private landowners for land management activities
- Loss of small family farms
- Rivers and streams with eroding banks.

Residents were asked to indicate whether a concern is "not a problem," a "slight problem," a "moderate problem," or a "serious problem." The problem-severity scale was assigned numerical values for statistical computations ("not a problem" = 1, . . ., "serious problem" = 4).

The severity ratings for the 1999 survey can be found in table 2. In general, the most severe problems in southeastern Minnesota in 1994 remained the most severe problems in 1999 (fig. 2). Of the 15 concerns in the survey, there was a significant change in severity for all but four concerns: quality of wildlife habitat, woodlands

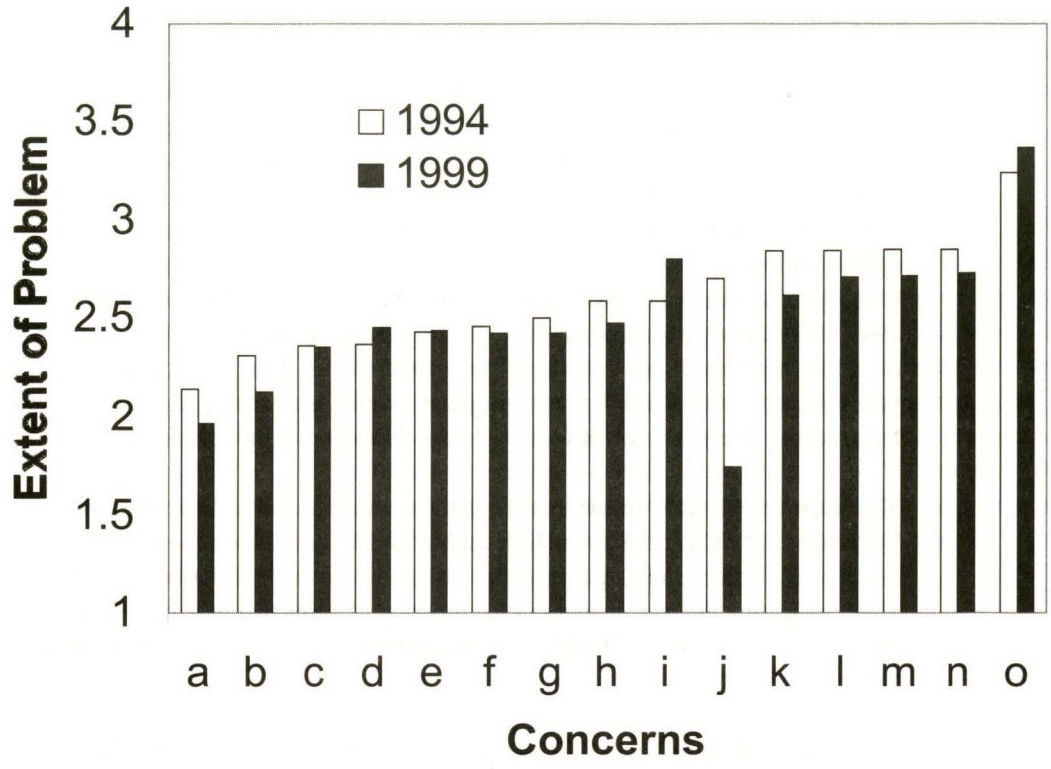

Figure 2.—Average extent of problem for various concerns about environmental quality and land use, all places, 1994 and 1999.

Key—Extent of problem:
1 = Not a problem
2 = Slight problem
3 = Moderate problem
4 = Serious problem

Key—Concerns (shaded concerns indicate a significant change between 1994 and 1999):
a = Frequency and extent of flooding
b = Way in which public lands are managed
c = Quality of wildlife habitat
d = Woodlands and other natural communities occurring only as small scattered areas
e = Coordination among public programs to provide assistance to private landowners for land management activities
f = Availability of incentives for private landowners to adopt practices that benefit the environment
g = Groundwater quality
h = Loss of wetlands
i = Expansion of housing development into rural areas
j = Job opportunities
k = Soil erosion
l = Quality of fish habitat
m = Water quality of streams, rivers, and lakes
n = Rivers and steams with eroding banks
o = Loss of small family farms

and other natural communities occurring only as small scattered areas, coordination among public programs, and availability of incentives for private landowners.

This survey topic of local environmental and land use concerns was the most dynamic of any of the five topics. For each place, the between-year correlation coefficients for consistency of response were relatively low (table 3). Low between-year correlation coefficients indicate a difference between responses given in 1994 and 1999, when measured by the average severity value for each concern. The lower correlations are mainly due to changes in two items: the large increase in the problem severity of "expansion of housing development into rural areas" between 1994 and 1999 for all three places, and the decrease in problem severity of "job opportunities" for all three places. If these two items are eliminated, all three places obtain between-year correlation coefficients of 0.92 or greater, which is relatively high and shows a large degree of consistency in views between the years for the remaining 13 items.

The responses given by residents of each place were similar to the responses given by residents of all places in both 1994 and 1999. The correlation coefficients between each place and all places combined are relatively high for both 1994 and 1999, indicating that any changes in the ordering of items that took place between survey years were largely shared by Wells Creek and the two neighboring places (table 4).

Since we are interested in differences in the responses given in 1999 by Wells Creek residents and responses given by residents in bluffland and other counties, we can look at whether the changes in responses occurring in Wells Creek were similar to changes occurring elsewhere. On an item-by-item basis, Wells Creek residents judged 2 items as significantly more severe in 1999 than in 1994, 3 less severe, and 10 as unchanged (table 5). These changes (or lack of changes) that occurred in Wells Creek were regularly shared with the neighboring places. For 7 of the 15 items, what happened in Wells Creek between surveys also happened in both of the neighboring places. For another five items, what happened in Wells Creek was shared with one of the neighboring places. That leaves three items for which Wells Creek diverged from both neighboring places: "frequency and extent of flooding," "soil erosion," and "ways in which public lands are managed" (table 6). For all three of these items, Wells Creek residents indicated no change in problem severity, while residents of both neighboring places indicated a significant decrease in problem severity. These decreases moved both neighboring places closer to the problem-severity ratings of Wells Creek residents, creating a more uniform view of these items across all places.

Severity of Environmental and Land Use Concerns—Focus on Water-Related Items

To isolate items that the general public may more closely associate with watershed planning projects such as the WCWP, we examined the six water-related concerns as a separate group. The six water-related items are water quality of streams, rivers, and lakes; ground water quality; frequency and extent of flooding; loss of wetlands; quality of fish habitat; and rivers and streams with eroding banks.

The separate examination of the water-related items led to the same general finding as examination of all items—there is little indication of a marked divergence in perspectives between Wells Creek residents and residents of the two neighboring places. For the six water-related items, there is high consistency between survey years in all three places (table 7) and consistency between places in 1994 and 1999 (table 8).

On an item-by-item basis, Wells Creek had two items that showed a significant decrease in problem severity, and both of these changes were shared with one other place (see table 9). No item showed a significant increase in problem severity. The remaining four items showed no change for Wells Creek; one of these was shared with both neighboring places, two were shared with one place, and one was not shared with any place. The latter item was "frequency and extent of flooding," for which—as described above—residents of both neighboring places indicated a significant decrease in problem severity (table 6). These decreases moved both neighboring places closer to the problem-severity ratings of Wells Creek residents, creating a more uniform view of this item across all places.

Sources of Information on the Environment and Land Use

People were asked to specify the places where they have obtained information on land use and the environment. Respondents identified as many of the 14 sources of information they have used:

- Federal offices
- State offices
- County or township offices
- Soil and Water Conservation District Offices
- Agricultural Extension Service
- TV
- Radio
- Newspapers
- Magazines
- Conservation or environmental groups
- Local civic groups
- Libraries
- Family members
- Friends and other people

This topical area was not nearly as dynamic as the preceding one. It is more indicative of the remaining topical areas, all of which exhibited relatively little change between 1994 and 1999 or between places. In general, residents turned to the mass media for answers to their questions about the environment and land use (table 10). Friends and family members were also common sources of information. The use of only 4 of 14 sources of information was significantly different in 1999 than 1994; Soil and Water Conservation District offices showed a decline in use, and county and township offices, family members, and friends and other people all showed an increase in use (fig. 3).

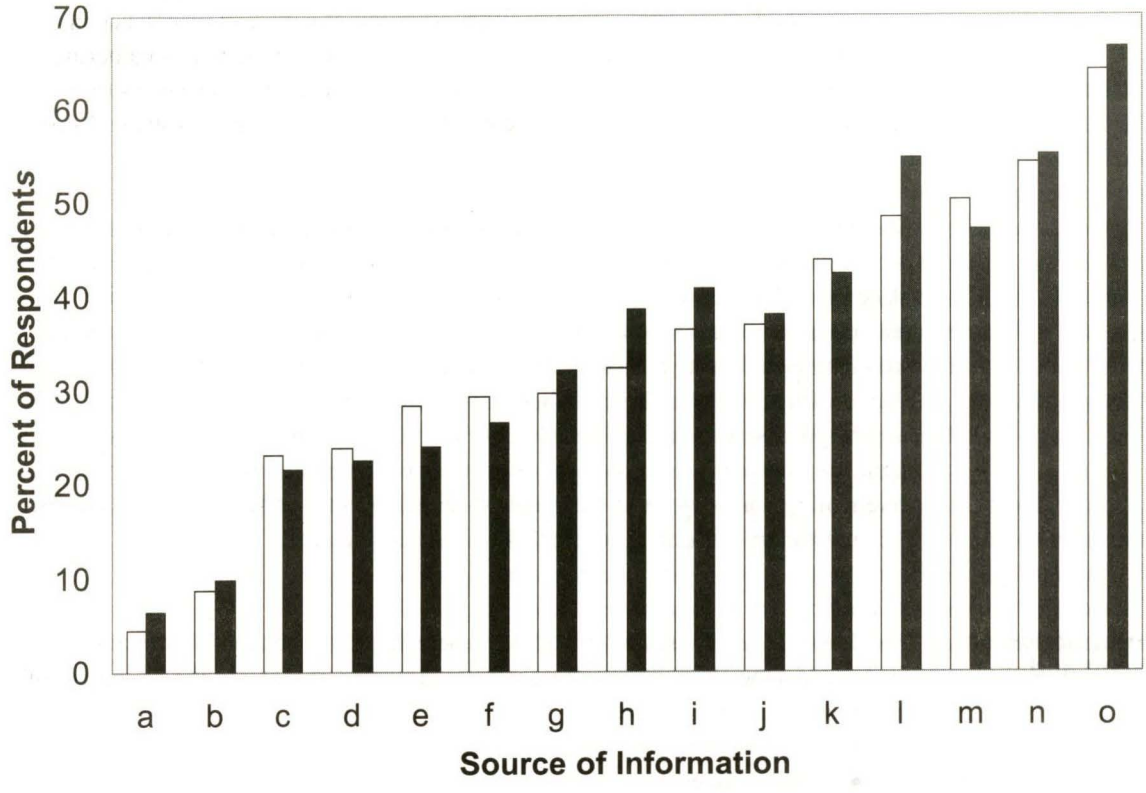

Figure 3.—Percent of respondents indicating that they use the source of information, all places, 1994 and 1999.

Key—Source of information (shaded sources showed a significant change in use between 1994 and 1999):
a = Other
b = Local civic groups
c = Libraries
d = Conservation or environmental groups
e = Soil and Water Conservation District Offices
f = Federal offices
g = Agricultural Extension Service
h = Family members
i = County or township offices
j = State offices
k = Radio
l = Friends and other people
m = Magazines
n = TV
o = Newspapers

Residents of each place used information sources with largely the same frequency in 1994 and 1999 (table 11). However, Wells Creek is different from its neighbors, and consistently so in both 1994 and 1999 (table 12).

On an item-by-item basis, Wells Creek residents did not significantly change their use of 13 of the 14 information sources between 1994 and 1999 (table 13). Nine of the 13 information sources that had no change were similarly "no change" in both neighboring places, and the remaining four were "no change" in one neighboring place. The only item to change significantly in Wells Creek was "TV," which decreased in use between 1994 and 1999 (table 14). Neither of the neighboring places exhibited a change in the use of "TV."

Actions Taken to Affect Environmental Quality and Land Use

People were asked to indicate the actions they have taken to affect environmental quality and land use. Respondents identified all, some, or none of the following 13 items:

- Campaigned for a candidate with views similar to mine
- Voted for candidates with views similar to mine
- Phoned or personally lobbied legislators or agency officials
- Written letters to legislators or public agency officials
- Written letters to newspapers
- Worked on regional or State panels or task forces
- Taken part in community or local projects or activities
- Gone to public meetings
- Joined a conservation group
- Collected signatures for a petition
- Changed some things I do in my home
- Changed some of the practices where I work
- Changed the way I manage my land

More than two-thirds of the residents indicated that they have "changed things at home" to affect the environment (table 15). A significant number of residents also indicated that they had voted for a candidate to affect the environment. Participation in two actions changed significantly between 1994 and 1999—more people indicated that they had attended public meetings to affect the environment, but fewer people indicated that they had changed the way they had managed their land (fig. 4).

Virtually no change was found in the frequency of actions taken between years in any of the three places (table 16). The between-year correlation coefficient was 0.99 for the three places. Wells Creek residents had some modest differences with the neighboring places in both 1994 and 1999 (table 17).

On an item-by-item basis, Wells Creek residents did not significantly change their participation in 12 of the 13 possible actions between 1994 and 1999 (table 18). Nine of the 12 possible actions that had no change in Wells Creek were similarly "no change" in both neighboring places, and the remaining three were "no change" in one neighboring place. The only item to change significantly in Wells Creek was

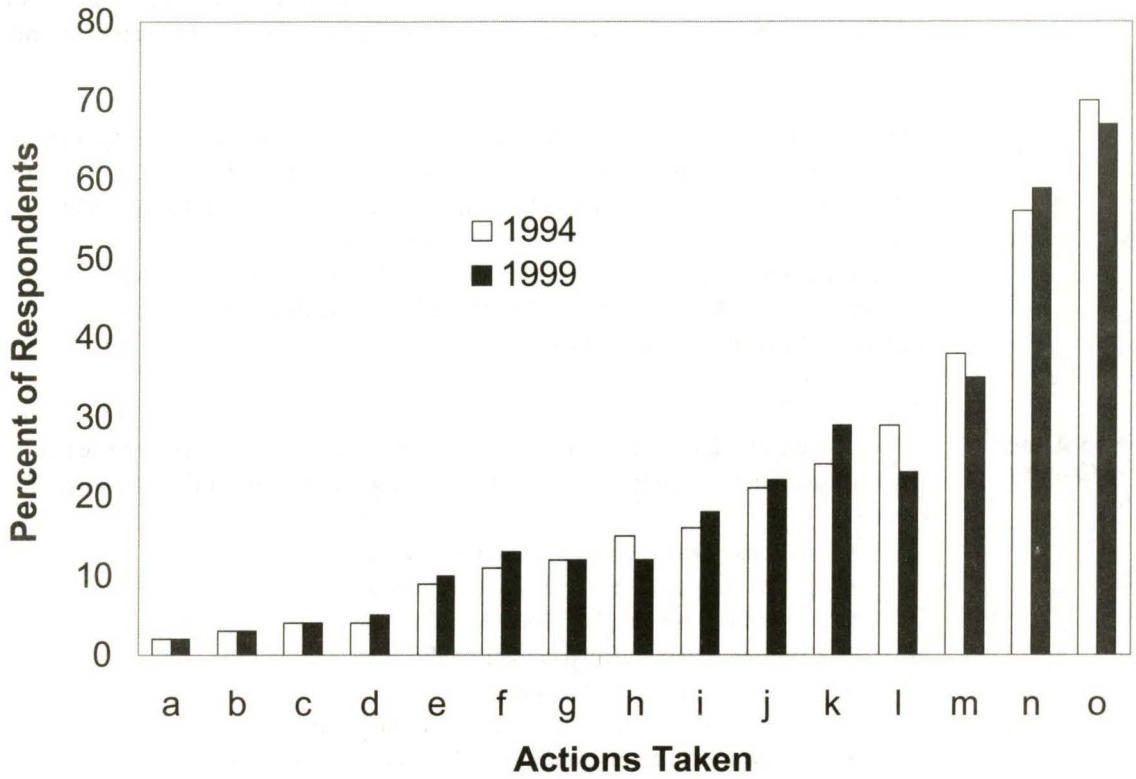

Figure 4.—Percent of respondents indicating that they had taken an action to affect environmental quality and land use, all places, 1994 and 1999.

Key—I have... (shaded actions indicate a significant change between 1994 and 1999):
a = worked on regional or State panels or task forces.
b = written letters to newspapers.
c = other.
d = collected signatures for a petition.
e = phoned or personally lobbied legislators or agency officials.
f = campaigned for candidate with views similar to mine.
g = written letters to legislators or public agency officials.
h = joined a conservation group.
i = I have not taken any specific action related to the environment.
j = taken part in community or local projects or activities.
k = gone to a public meeting.
l = changed the way I manage my land.
m = changed some of the practices where I work.
n = voted for candidates with views similar to mine.
o = changed some things I do in my home.

"campaigned for a candidate with views similar to mine," which increased between 1994 and 1999 (table 19). Neither of the neighboring places exhibited a change with respect to this particular action.

Attitudes About the Environment and Environmental Management

People were asked to indicate their level of agreement with 15 statements concerning their general attitudes toward the environment and environmental management. The agreement scale ranged from "strongly disagree," to "mildly disagree," to "neither agree nor disagree," to "mildly agree," to "strongly agree." The agreement scale was assigned numerical values for statistical computations ("strongly disagree" = 1, . . . , "strongly agree" = 5). Statements included:

- My quality of life depends on the health of the environment.
- An important step in maintaining environmental quality is to develop community goals for the environment in our region.
- Public policies that influence land use and environmental quality should be developed by resource professionals with little input from citizens.
- Sometimes it is OK to degrade the environment to promote economic development.
- A healthy economy depends on a healthy environment.
- Cost should be an important consideration in making decisions on preserving rare plants and animals.
- We should limit our development and use of the environment today so that future generations will have the resources they need to live.
- Conserving and restoring pre-European settlement plant communities should be an important goal of public land management agencies.
- Economic development activities in my region should focus on diversifying the economy.
- When managing public lands, the economic health of my community should be given highest priority.
- River flood plains should exist in a natural state, free of buildings or other structures.
- We should maintain or enhance the diversity of wildlife populations.
- Private landowners and public land managers currently work together effectively to protect the environment.
- New residential development should be restricted to areas adjacent to existing urban centers.
- We should maintain or enhance the diversity of natural plant communities.

Residents showed the strongest agreement with the statement that their quality of life depends on the environment. Residents disagreed (on average) with only two statements—about the development of public policy, and about it being OK to degrade the environment (table 20). Little change was found in people's level of agreement with these items between years in the three places (fig. 5). Changes in only four statements were significant—residents indicated an increase in agreement with the statements addressing quality of life and pre-European settlement plant communities, while residents indicated less agreement with statements about the importance of costs in preserving rare plants and animals and the need to focus economic development on diversifying the economy.

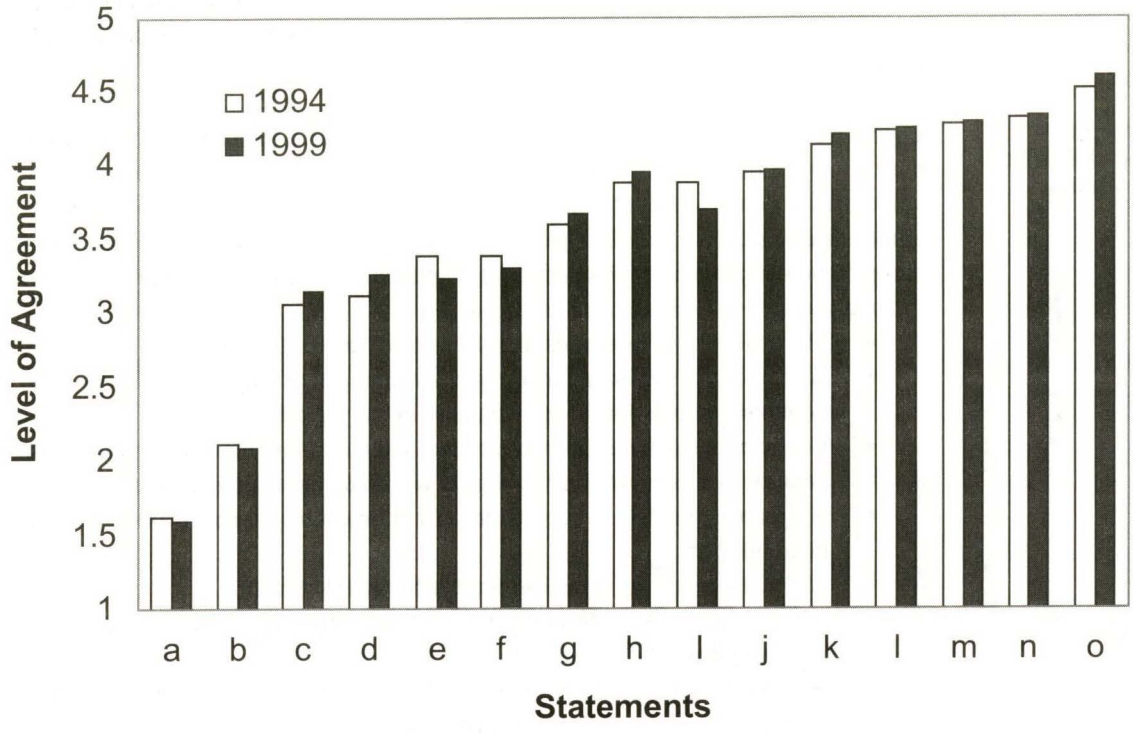

Figure 5.—Average agreement with statements related to an individual's relationship to the environment, 1994 and 1999.

Key—Average agreement:
1 = Strongly disagree
2 = Mildly disagree
3 = Neutral
4 = Mildly agree
5 = Strongly agree

Key—Statement (shaded statement indicates a significant change between 1994 and 1999):
a = Public policies that influence land use and environmental quality should be developed by resource professionals with little input from citizens.
b = Sometimes it is OK to degrade the environment to promote economic development.
c = Private landowners and public land managers currently work together effectively to protect the environment.
d = Conserving and restoring pre-European settlement plant communities should be an important goal of public land management agencies.
e = Cost should be an important consideration in making decisions on preserving rare plants and animals.
f = When managing public lands, the economic health of my community should be given highest priority.
g = New residential development should be restricted to areas adjacent to existing urban centers.
h = We should maintain or enhance the diversity of natural plant communities.
i = Economic development activities in my region should focus on diversifying the economy.
j = River flood plains should exist in a natural state, free of buildings or other structures.
k = A healthy economy depends on a healthy environment.
l = We should maintain or enhance the diversity of wildlife populations.
m = We should limit our development and use of the environment today so that future generations will have the resources they need to live.
n = An important step in maintaining environmental quality is to develop community goals for the environment in our region.
o = My quality of life depends on the health of the environment.

The between-year correlation coefficient was 0.99 for the three places (table 21). Wells Creek residents exhibited few differences with the neighboring places in both 1994 and 1999 (table 22). The correlation coefficient between Wells Creek and all places was 0.97 in 1994 and 0.98 in 1999. In short, people's attitudes toward this topic were largely unchanged over time and space.

On an item-by-item basis, Wells Creek residents did not significantly change their level of agreement with 14 of the 15 statements between 1994 and 1999 (table 23). Ten of the 14 statements that had no change similarly had no change in both neighboring places, three had "no change" in one neighboring place, and the remaining one exhibited a significant change in both other places. This latter item was "economic development activities in my region should focus on diversifying the economy" (table 24). The item had significantly lower agreement in the two neighboring places. These decreases moved both neighboring places closer to the level of agreement of Wells Creek residents, creating a more uniform view of this item across all places.

One item demonstrated a significant change for Wells Creek, and this change was not replicated in either of the neighboring places. Wells Creek residents significantly decreased their level of agreement with the statement: "sometimes it is OK to degrade the environment to promote economic development." This decrease in Wells Creek moved the level of agreement in Wells Creek closer to the neighboring places, creating a more uniform view of this item across all places.

Future Environmental Conditions People Desire

People were asked to indicate whether they would like to see "more," "less," or "about the same amount" of 12 environmental conditions and land uses. The future-condition scale was assigned numerical values for statistical computations ("less" = 1, . . . , "more" = 3). Conditions queried included:

- Area of natural cover, including forests, woodlands, prairies, and wetlands
- Area of new residential development in rural areas
- Area devoted to the protection of rare plant and animal species
- Area of pre-European settlement plant communities that are being conserved or have been restored
- Area of new light industrial development in rural areas
- Area of public land managed using techniques that attempt to imitate nature
- Length of rivers or streams that have been straightened or channeled
- Area of wetlands that have been restored or conserved
- Number of recreation areas devoted to non-motorized outdoor recreation
- Area of river flood plains that have been maintained or restored to their natural state, free of structures
- Areas in towns and cities planted to trees and shrubs
- Areas of forest devoted to supporting the local wood products industries

All the conditions listed above have some proponents, but for three conditions residents would, on average, prefer to see less area—the two conditions dealing with new development in rural areas (both residential and light industrial) and the length

of rivers and streams straightened or channeled (table 25). There was significant change between 1994 and 1999 in what conditions people would like to see for five features. Residents would like even more land devoted to pre-European settlement plant communities and areas devoted to protecting rare plant and animal species in 1999 than in 1994 (fig. 6). There was less support in 1999 than in 1994 for new residential or light industrial development in rural areas, or for areas planted to trees and shrubs in urban areas. Despite a decline in support for area in towns and cities planted to trees in shrubs, this condition still enjoys the strongest support overall.

Virtually no change was found in people's desires for future conditions between years in any of the three places (table 26). The minimum between-year correlation coefficient was 0.98 for the three places. Wells Creek residents exhibited few differences with the neighboring places in both 1994 and 1999 (table 27). The correlation coefficient between Wells Creek and all places was 0.96 in 1994 and 0.97 in 1999. In short, the future conditions people desire were largely unchanged over time and space.

On an item-by-item basis, Wells Creek residents did not significantly change views on any of the 12 future-condition items between 1994 and 1999 (table 28). Eight of these 12 future-condition items that had no change were similarly "no change" in both neighboring places, and the remaining four were "no change" in one neighboring place. On no future-condition item did Wells Creek residents differ with residents of both neighboring places (table 29).

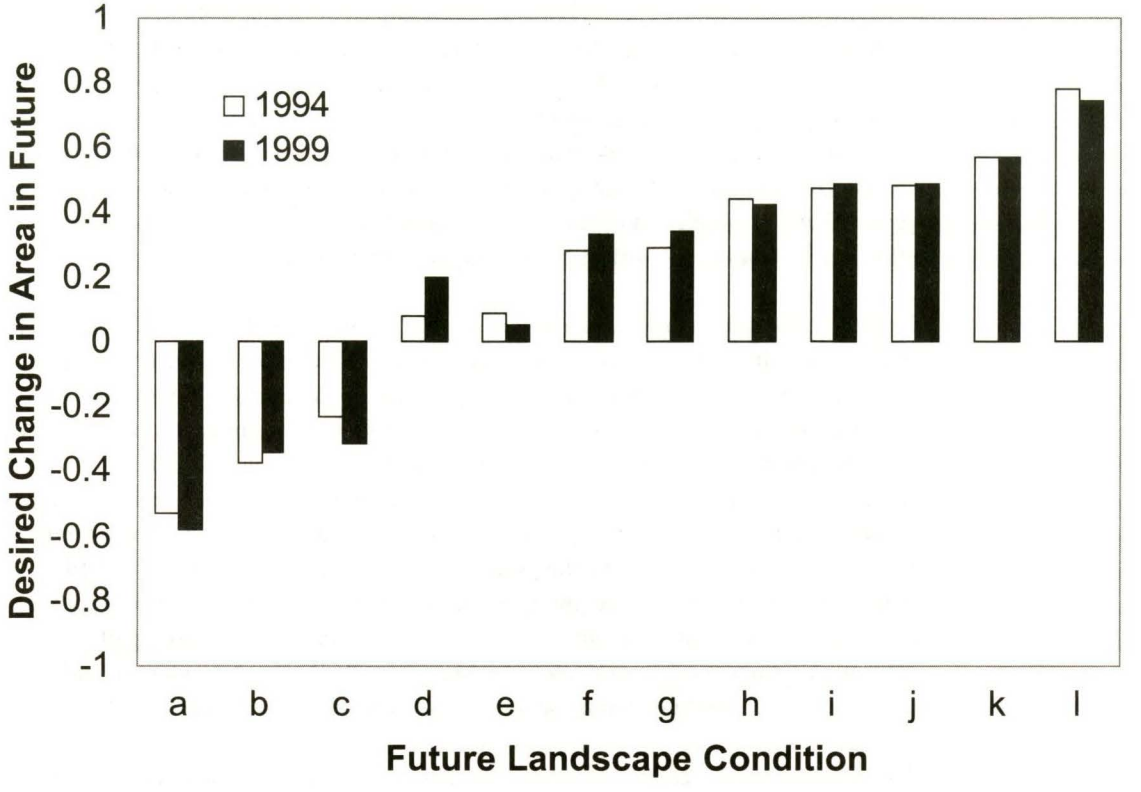

Figure 6.—Average desired change in landscape condition, all places, 1994 and 1999.

Key—Amount of the landscape condition the resident would like to see in the future:
-1 = Less
0 = About the same
1 = More

Key—Statement (shaded statement indicates a significant change between 1994 and 1999):
a = Area of new residential development in rural areas.
b = Length of rivers or streams that have been straightened or channeled.
c = Area of new light industrial development in rural areas.
d = Area of pre-European settlement plant communities that are being conserved or have been restored.
e = Area of forest devoted to supporting the local wood products industries.
f = Area of public land managed using techniques that attempt to imitate nature.
g = Area devoted to the protection of rare plant and animal species.
h = Number of recreation areas devoted to non-motorized outdoor recreation.
i = Area of wetlands that have been restored or conserved.
j = Area of river flood plains that have been maintained or restored to their natural state, free of structures.
k = Area of natural cover, including forests, woodlands, prairies, and wetlands.
l = Area in towns and cities planted to trees and shrubs.

Discussion

We were particularly interested in finding any divergences in the thinking and behavior between Wells Creek residents and residents of two neighboring places, divergences that might be associated with the presence of the watershed project. Some divergences were found, but, in general, responses were remarkably stable between 1994 and 1999. The divergences that were found do not appear to have any coherence; they seem to be more the consequence of happenstance than reflective of an underlying cause. A regularity (described below) was found in the set of divergences, but it is not clear how it could be interpreted with respect to the watershed effort or, for that matter, with respect to any underlying cause.

The study, overall, found little change in people's opinions and behaviors from 1994 to 1999. Stability—over time and between places—is the major characterization of people's thinking and behavior in this study. Of the 69 items in the survey, the responses by Wells Creek residents in 1994 and 1999 were significantly different on only eight items (or 12 percent) (table 30). And most of what was found in the responses of Wells Creek residents over time was similar to what was found in the neighboring places. The majority of the Wells Creek changes (or lack of changes) were shared with both neighboring places (43 of 69 items), and an additional 19 items were shared with one neighboring place. On only seven (or 10 percent) of the items were Wells Creek residents different from those in both neighboring places. In other words, there are few examples of items where Wells Creek residents clearly diverged in their thinking and behavior relative to neighboring places.

These few (seven) examples of differences between Wells Creek and neighboring places do not appear to have content linkages to each other (table 31). A regularity, however, was found among these seven. In five of these seven, the changes between 1994 and 1999 brought Wells Creek and the two neighboring places closer together, creating a more uniform view of these items across all places (the two items for which the three places did not come closer together were "TV," as a source of information, and "way in which public lands are managed," as an issue). How such a homogenization of views (if it exists as an underlying pattern) would link to the watershed effort is not obvious. Such an effect of the watershed effort would seem counterintuitive.

Beyond this finding for these seven items, the evidence for a general homogenization effect is mixed and, thus, not overly compelling. Evidence for a greater uniformity of views between Wells Creek and the neighboring places exists for three topics (problem severity, relation to environment and environmental management, and future conditions), but not for the other two topics (sources of information, and actions taken). This evidence comes from the correlation coefficients between Wells Creek and all places in 1994 and 1999. If the 1999 coefficient is greater than the 1994 coefficient, the views across places have become more uniform.

MN DNR staff essential to the establishment and success of the Wells Creek Partnership shared some observations with us about the conduct of the project. They observed that it is very difficult to engage citizens in proactive activities related to land management and planning in areas such as southeastern Minnesota where there

are no crises or critical issues to galvanize the community. However, this lack of a driving issue also presents an opportunity of working from a comprehensive, strategic perspective rather than having to start with a battle plan to solve some single critical problem. The amount of time spent by MN DNR staff in activities to engage people in developing a shared vision of "desired future conditions" was far more than originally anticipated. Support for various landscape characteristics that would lead to "desired future conditions" as measured by the two surveys was surprisingly consistent, but finding and encouraging those individuals ready to initiate personal change to begin making the vision a reality is a very slow process.

While the survey found that the attitudes and behaviors of residents of southeastern Minnesota were largely unchanged between 1994 and 1999, these attitudes and behaviors have been shaped by a lifetime of experience and information. Those residents who were aware and in tune with environmental and land use issues before the initiation of the MN DNR's comprehensive watershed planning efforts, remain so. Those who were not will need an overwhelming number of new experiences or exposures to new information before they will be ready to change. The process of moving a person from heightened awareness and understanding of complex environmental issues to changed behavior may take longer than previously thought. However, if the capacity of the community to make better decisions affecting the environment has been raised through education and involvement, it will eventually be reflected in future decisions. Because of this extended timeline, MN DNR staff would like to repeat the survey in another 5 years to further track landowner perceptions and behavior relating to environmental issues and land use.

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Table 1.—Disposition of mailed surveys

Place	Number initially mailed	Number deliverable	Number returned	Percent returned
Wells Creek watershed	510	492	259	52.6
Bluffland counties[1]	1,000	933	443	47.5
Other counties[2]	1,000	915	434	47.4
Total	2,510	2,340	1,136	48.5

[1] Bluffland counties include Goodhue (minus Wells Creek watershed residents), Wabasha, Olmstead, Winona, Fillmore, and Houston Counties.

[2] Other counties include Rice, Steele, Dodge, Freeborn, and Mower Counties.

Table 2.—"Below are some concerns about environmental quality and land use in your region. How much of a problem do you think each is where you live?" Percent of responses shown by where respondents live and by place (location of residence), 1999.

Concern and response	Total	Where do you live?			Place		
		Farm	Rural non-farm	City or town	Wells Creek watershed	Bluffland counties[1]	Other counties[2]
Water quality of streams, rivers, and lakes							
Not a problem	10.5	17.0	13.6	8.1	18.1	10.7	9.9
Slight problem	24.0	31.5	28.8	20.9	28.0	25.0	22.1
Moderate problem	40.1	35.1	39.9	41.2	34.6	40.5	39.0
Serious problem	18.5	8.4	13.0	22.4	15.4	15.0	24.9
Don't know	7.0	8.1	4.8	7.5	3.9	8.9	4.2
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Ground water quality							
Not a problem	20.5	28.9	29.2	15.9	21.7	19.1	22.5
Slight problem	24.3	24.3	28.1	23.0	27.2	23.6	25.6
Moderate problem	30.3	29.3	22.3	33.0	31.5	31.4	28.0
Serious problem	13.5	7.8	13.9	14.6	13.8	14.1	13.0
Don't know	11.4	9.7	6.3	13.4	5.9	11.8	10.9
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Frequency and extent of flooding							
Not a problem	34.2	40.4	44.7	29.6	39.2	31.2	39.0
Slight problem	36.2	36.6	33.6	37.0	38.4	35.8	36.9
Moderate problem	18.7	19.9	11.1	20.8	16.4	20.3	16.1
Serious problem	6.2	3.0	7.3	6.5	4.4	6.4	5.8
Don't know	4.7	.0	3.2	6.1	1.6	6.4	2.2
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Loss of wetlands							
Not a problem	22.0	47.6	23.5	16.0	36.2	22.8	20.8
Slight problem	23.3	21.1	26.6	22.8	24.9	22.8	24.1
Moderate problem	21.3	13.6	24.3	22.0	16.3	21.7	20.8
Serious problem	20.7	12.1	18.0	23.4	11.7	17.8	25.2
Don't know	12.7	5.7	7.6	15.9	10.9	14.8	9.2
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Soil erosion							
Not a problem	22.0	47.6	23.5	16.0	36.2	22.8	20.8
Slight problem	23.3	21.1	26.6	22.8	24.9	22.8	24.1
Moderate problem	21.3	13.6	24.3	22.0	16.3	21.7	20.8
Serious problem	20.7	12.1	18.0	23.4	11.7	17.8	25.2
Don't know	12.7	5.7	7.6	15.9	10.9	14.8	9.2
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0

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(Table 2 continued)

Concern and response	Total	Where do you live?			Place		
		Farm	Rural non-farm	City or town	Wells Creek watershed	Bluffland counties[1]	Other counties[2]
Quality of fish habitat							
Not a problem	9.6	19.4	10.0	7.4	17.6	9.8	9.2
Slight problem	23.0	27.8	28.5	20.3	28.9	23.6	21.8
Moderate problem	32.7	21.7	32.2	35.2	24.2	32.3	33.2
Serious problem	17.9	10.2	18.4	19.4	11.3	16.9	20.4
Don't know	16.7	20.9	10.9	17.7	18.0	17.4	15.4
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Quality of wildlife habitat							
Not a problem	25.4	53.0	26.3	19.2	42.6	26.4	23.9
Slight problem	22.9	17.2	25.3	23.4	27.5	23.2	22.2
Moderate problem	27.8	16.9	28.1	30.0	21.1	27.5	28.1
Serious problem	14.6	10.5	15.9	15.0	4.8	12.7	18.0
Don't know	9.3	2.3	4.3	12.4	4.0	10.2	7.8
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Woodlands and other natural communities occurring only as small scattered areas							
Not a problem	19.5	40.9	24.7	13.2	35.7	19.7	18.6
Slight problem	26.0	23.5	23.1	27.5	23.0	26.1	26.0
Moderate problem	23.9	11.6	24.1	26.5	26.6	24.5	23.2
Serious problem	17.4	12.9	20.6	17.4	5.6	14.4	22.4
Don't know	13.2	11.1	7.6	15.4	9.1	15.1	9.8
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Expansion of housing development into rural areas							
Not a problem	15.5	23.1	12.8	14.7	14.0	12.1	21.1
Slight problem	19.3	22.1	18.1	19.0	20.2	20.0	18.3
Moderate problem	28.5	25.6	26.9	29.6	24.5	28.5	27.9
Serious problem	31.5	29.2	39.3	29.6	38.5	33.5	28.4
Don't know	5.3	.0	3.0	7.1	2.7	5.9	4.2
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Job opportunities							
Not a problem	48.2	56.5	53.6	44.7	51.4	47.1	49.3
Slight problem	20.9	19.1	20.4	21.4	18.6	19.2	23.5
Moderate problem	14.4	12.4	14.6	14.8	11.9	15.6	12.8
Serious problem	5.4	3.3	4.3	6.1	5.9	5.5	5.5
Don't know	11.1	8.7	7.1	12.9	12.3	12.6	9.0
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0

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(Table 2 continued)

Concern and response	Total	Where do you live?			Place		
		Farm	Rural non-farm	City or town	Wells Creek watershed	Bluffland counties[1]	Other counties[2]
Way in which public lands are managed							
Not a problem	23.3	24.2	23.9	22.9	23.8	20.5	28.0
Slight problem	30.7	35.5	32.1	29.3	27.4	31.4	29.6
Moderate problem	19.9	13.3	22.8	20.4	18.3	20.3	18.9
Serious problem	6.9	9.0	9.4	5.6	11.9	7.1	6.8
Don't know	19.2	18.0	11.8	21.8	18.7	20.7	16.8
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Availability of incentives for private landowners to adopt practices that benefit the environment							
Not a problem	16.8	25.3	18.8	14.3	23.7	16.7	16.6
Slight problem	20.8	25.0	23.2	19.1	25.7	19.5	22.8
Moderate problem	21.6	21.9	20.0	22.0	24.9	21.5	21.9
Serious problem	12.5	14.1	13.4	11.9	8.3	13.3	11.4
Don't know	28.4	13.6	24.7	32.7	17.4	29.1	27.3
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Coordination among public programs to provide assistance to private landowners for land management activities							
Not a problem	12.6	16.7	13.9	11.3	17.7	12.4	12.8
Slight problem	20.8	23.2	23.8	19.3	25.4	21.2	19.9
Moderate problem	18.0	21.1	17.2	17.5	21.4	17.0	19.6
Serious problem	11.2	10.6	9.7	11.9	11.3	12.4	10.2
Don't know	37.4	28.4	35.3	39.9	24.2	37.1	37.5
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Loss of small family farms							
Not a problem	4.9	6.0	6.9	4.0	3.5	4.8	5.2
Slight problem	11.6	7.4	12.7	12.2	8.1	12.6	10.1
Moderate problem	20.9	15.8	18.9	22.6	17.1	21.5	20.0
Serious problem	55.3	67.8	56.4	52.3	68.2	53.2	58.8
Don't know	7.2	3.0	5.1	8.8	3.1	8.0	5.9
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Rivers and streams with eroding banks							
Not a problem	7.2	14.1	9.5	5.0	10.2	6.9	7.6
Slight problem	27.0	34.8	20.9	27.2	30.5	25.7	28.9
Moderate problem	33.9	25.8	40.1	33.8	34.4	35.4	31.5
Serious problem	17.8	15.0	18.7	18.1	16.4	17.7	18.2
Don't know	14.1	10.3	10.9	15.9	8.6	14.3	13.7
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0

[1] Bluffland counties include Goodhue (minus Wells Creek watershed residents), Wabasha, Olmstead, Winona, Fillmore, and Houston Counties.

[2] Other counties include Rice, Steele, Dodge, Freeborn, and Mower Counties.

Table 3.—For items related to severity of concerns, consistency in the responses given by residents of a place in 1994 and 1999[1]

Place	Correlation coefficients for consistency of response
All places	0.73
Wells Creek watershed	0.88
Bluffland counties[2]	0.73
Other counties[3]	0.71

[1] Table entries are correlation coefficients for the 15 problem items, as measured by the average problem-severity value. All correlation coefficients in the table are significant at the 0.05 level (two-tailed test). A high correlation coefficient (close to 1.00) suggests no differences in responses given by residents of a place in 1994 and 1999.

[2] Bluffland counties include Goodhue (minus Wells Creek watershed residents), Wabasha, Olmstead, Winona, Fillmore, and Houston Counties.

[3] Other counties include Rice, Steele, Dodge, Freeborn, and Mower Counties.

Table 4.—For items related to severity of concerns, consistency in the responses given by residents of a place and residents of all places, 1994 and 1999[1]

	Correlation coefficients for consistency of response	
Place	1994	1999
All places	1.00	1.00
Wells Creek watershed	0.86	0.90
Bluffland counties[2]	0.98	0.99
Other counties[3]	0.96	0.98

[1] Table entries are correlation coefficients for the 15 problem items, as measured by the average problem-severity value. All correlation coefficients in the table are significant at the 0.05 level (two-tailed test). A high correlation coefficient (close to 1.00) suggests no differences in responses given by residents of a place and residents of all places in that year.

[2] Bluffland counties include Goodhue (minus Wells Creek watershed residents), Wabasha, Olmstead, Winona, Fillmore, and Houston Counties.

[3] Other counties include Rice, Steele, Dodge, Freeborn, and Mower Counties.

Table 5.—For items related to the severity of concerns, number of items where the changes in the Wells Creek watershed responses between 1994 and 1999 were similar to changes in both, one, or none of the other two places[1]

Wells Creek watershed change	Number of items where the changes in the severity for Wells Creek watershed residents were similar to... ...both other places[2]	...one other place	... no other place	Wells Creek changes
Items showing a significant increase in problem severity	1	1	0	2
Items showing a significant decrease in problem severity	1	2	0	3
Items showing no significant change in problem severity	5	2	3	10
Total	7	5	3	15

[1] To be considered "similar," the Wells Creek change and a place change must both be significant and in the same direction at the 0.05 level (two-tailed test), or both changes must be not significant at the 0.05 level.

[2] Other places include the bluffland counties (Goodhue minus Wells Creek watershed residents, Wabasha, Olmstead, Winona, Fillmore, and Houston Counties) and other counties (Rice, Steele, Dodge, Freeborn, and Mower Counties).

Table 6.—"Below are some concerns about environmental quality and land use in your region. How much of a problem dc you think each is where you live?" Comparison of problem severity means between 1994 and 1999 by place[1]

Concern and values	All places	Place		
		Wells Creek watershed	Bluffland counties[2]	Other counties[3]
Water quality of streams, rivers, and lakes				
1999 mean severity value	2.72	2.49	2.66	2.82
Change in means: 1999 - 1994	-0.13	-0.25	-0.18	-0.04
Significance of change (two-tailed)	0.00	0.00	0.00	0.55
Ground water quality				
1999 mean severity value	2.42	2.40	2.46	2.35
Change in means: 1999 - 1994	-0.10	-0.10	-0.13	-0.05
Significance of change (two-tailed)	0.03	0.26	0.06	0.52
Frequency and extent of flooding				
1999 mean severity value	1.97	1.86	2.02	1.88
Change in means: 1999 - 1994	-0.17	-0.06	-0.16	-0.19
Significance of change (two-tailed)	0.00	0.41	0.01	0.00
Loss of wetlands				
1999 mean severity value	2.46	2.04	2.40	2.56
Change in means: 1999 - 1994	-0.13	0.03	-0.16	-0.08
Significance of change (two-tailed)	0.01	0.77	0.03	0.29
Soil erosion				
1999 mean severity value	2.63	2.56	2.65	2.60
Change in means: 1999 - 1994	-0.21	-0.08	-0.25	-0.15
Significance of change (two-tailed)	0.00	0.33	0.00	0.02
Quality of fish habitat				
1999 mean severity value	2.71	2.36	2.68	2.76
Change in means: 1999 - 1994	-0.13	-0.29	-0.14	-0.10
Significance of change (two-tailed)	0.00	0.00	0.04	0.15
Quality of wildlife habitat				
1999 mean severity value	2.35	1.88	2.30	2.44
Change in means: 1999 - 1994	-0.01	-0.05	0.00	-0.02
Significance of change (two-tailed)	0.86	0.56	0.99	0.77

(Continued on next page)

(Table 6 continued)

Concern and values	All places	Place: Wells Creek watershed	Place: Bluffland counties[2]	Place: Other counties[3]
Woodlands and other natural communities occurring only as small scattered areas				
1999 mean severity value	2.46	2.02	2.40	2.55
Change in means: 1999 - 1994	0.09	0.09	0.09	0.08
Significance of change (two-tailed)	0.06	0.32	0.20	0.28
Expansion of housing development into rural areas				
1999 mean severity value	2.80	2.90	2.89	2.66
Change in means: 1999 - 1994	0.21	0.28	0.19	0.25
Significance of change (two-tailed)	0.00	0.00	0.01	0.00
Job opportunities				
1999 mean severity value	1.75	1.68	1.76	1.72
Change in means: 1999 - 1994	-0.96	-0.65	-0.89	-1.06
Significance of change (two-tailed)	0.00	0.00	0.00	0.00
Way in which public lands are managed				
1999 mean severity value	2.13	2.22	2.18	2.05
Change in means: 1999 - 1994	-0.19	-0.10	-0.17	-0.21
Significance of change (two-tailed)	0.00	0.28	0.01	0.00
Availability of incentives for private landowners to adopt practices that benefit the environment				
1999 mean severity value	2.42	2.22	2.44	2.39
Change in means: 1999 - 1994	-0.04	-0.10	0.02	-0.15
Significance of change (two-tailed)	0.38	0.27	0.76	0.06
Coordination among public programs to provide assistance to private landowners for land management activities				
1999 mean severity value	2.45	2.35	2.47	2.43
Change in means: 1999 - 1994	0.02	-0.10	0.06	-0.04
Significance of change (two-tailed)	0.64	0.30	0.45	0.65
Loss of small family farms				
1999 mean severity value	3.37	3.55	3.34	3.41
Change in means: 1999 - 1994	0.12	0.23	0.15	0.08
Significance of change (two-tailed)	0.00	0.00	0.02	0.20
Rivers and streams with eroding banks				
1999 mean severity value	2.73	2.62	2.75	2.70
Change in means: 1999 - 1994	-0.12	-0.03	-0.16	-0.07
Significance of change (two-tailed)	0.00	0.73	0.01	0.27

[1] Shaded cells in the table denote a two-tailed significant change at the 0.05 level.

[2] Bluffland counties are Goodhue (minus Wells Creek watershed residents), Wabasha, Olmstead, Winona, Fillmore, and Houston Counties.

[3] Other counties include Rice, Steele, Dodge, Freeborn, and Mower Counties.

Table 7.—For items related to severity of concerns associated with a watershed project, consistency in the responses given by residents of a place on items related to watershed management and use in 1994 and 1999[1]

Place	Correlation coefficients for consistency of response
All places	1.00
Wells Creek watershed	0.95
Bluffland counties[2]	1.00
Other counties[3]	0.99

[1] Table entries are correlation coefficients for the six concerns associated with a watershed project, as measured by the average problem-severity value. All correlation coefficients in the table are significant at the 0.05 level (two-tailed test). A high correlation coefficient (close to 1.00) suggests no differences in responses given by residents of a place in 1994 and 1999.

[2] Bluffland counties include Goodhue (minus Wells Creek watershed residents), Wabasha, Olmstead, Winona, Fillmore, and Houston Counties.

[3] Other counties include Rice, Steele, Dodge, Freeborn, and Mower Counties.

Table 8.—For items related to severity of the issues associated with a watershed project, consistency in the responses given by residents of a place and residents of all places on items related to watershed management and use, 1994 and 1999[1]

Place	Correlation coefficients for consistency of response	
	1994	1999
All places	1.00	1.00
Wells Creek watershed	0.84	0.86
Bluffland counties[2]	0.99	0.99
Other counties[3]	0.98	0.98

[1] Table entries are correlation coefficients for the six concerns associated with a watershed project, as measured by the average problem-severity value. All correlation coefficients in the table are significant at the 0.05 level (two-tailed test). A high correlation coefficient (close to 1.00) suggests no differences in responses given by residents of a place in 1994 and 1999.

[2] Bluffland counties include Goodhue (minus Wells Creek watershed residents), Wabasha, Olmstead, Winona, Fillmore, and Houston Counties.

[3] Other counties include Rice, Steele, Dodge, Freeborn, and Mower Counties.

Table 9.—For items related to severity of the issues associated with a watershed project, number of items where the change in the Wells Creek watershed between 1994 and 1999 was similar to changes in both, one, or none of the other two places[1]

Wells Creek watershed change	Number of items where the changes in the severity for Wells Creek were similar to... ...both other places[2]	...one other place	... no other place	Wells Creek changes
Items showing a significant increase in problem severity	0	0	0	0
Items showing a significant decrease in problem severity	0	2	0	2
Items showing no significant change in problem severity	1	2	1	4
Total	1	4	1	6

[1] To be considered "similar," the Wells Creek change and a place change must both be significant and in the same direction at the 0.05 level (two-tailed test), or both changes must be not significant at the 0.05 level.

[2] Other places include the bluffland counties (Goodhue minus Wells Creek watershed residents, Wabasha, Olmstead, Winona, Fillmore, and Houston Counties) and other counties (Rice, Steele, Dodge, Freeborn, and Mower Counties).

Table 10.—"If you have questions about land use and the environment there are many places you can turn to for information. Please look over the list below, and check the sources you've used to obtain information on land use and the environment." Percent of responses shown by where respondents live and by place (location of residence), 1999.

Source of information	Total	Where do you live?			Place		
		Farm	Rural non-farm	City or town	Wells Creek watershed	Bluffland counties[1]	Other counties[2]
Federal offices	26.6	56.4	22.8	21.0	39.8	28.6	23.4
State offices	38.1	36.6	37.3	38.6	36.5	38.5	37.3
County or township offices	40.9	56.6	50.9	33.9	54.1	40.0	42.3
Soil and Water Conservation District	24.0	61.2	22.6	15.8	49.6	21.0	28.9
Agricultural Extension Service	32.1	70.7	28.4	24.5	52.0	32.7	31.0
TV	55.2	30.3	54.1	61.3	29.5	55.7	54.3
Radio	42.5	27.5	41.1	46.4	29.1	42.5	42.0
Newspapers	66.5	54.7	66.5	69.2	53.7	67.1	65.4
Magazines	47.2	55.4	39.8	47.9	47.1	47.3	46.7
Conservation or environmental groups	22.5	20.1	21.2	23.5	19.7	21.0	24.9
Local civic groups	9.9	5.3	7.3	11.8	8.6	8.6	11.8
Libraries	21.5	18.7	17.8	23.5	12.3	21.3	21.8
Family members	38.7	42.6	37.2	38.3	28.7	38.0	39.4
Friends & other people	54.9	54.3	53.1	55.6	44.3	55.9	53.8
Other	6.4	4.6	4.4	7.4	8.6	6.8	5.5
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0

[1] Bluffland counties include Goodhue (minus Wells Creek watershed residents), Wabasha, Olmstead, Winona, Fillmore, and Houston Counties.

[2] Other counties include Rice, Steele, Dodge, Freeborn, and Mower Counties.

Table 11.—For items indicating use of various sources of information, consistency in the responses given by residents of a place in 1994 and 1999[1]

Place	Correlation coefficients for consistency of response
All places	0.98
Wells Creek watershed	0.96
Bluffland counties[2]	0.97
Other counties[3]	0.96

[1] Table entries are correlation coefficients for the 14 information-source items, as measured by the percent of people using a source. All correlation coefficients in the table are significant at the 0.05 level (two-tailed test). A high correlation coefficient (close to 1.00) suggests no differences in responses given by residents of a place in 1994 and 1999.

[2] Bluffland counties include Goodhue (minus Wells Creek watershed residents), Wabasha, Olmstead, Winona, Fillmore, and Houston Counties.

[3] Other counties include Rice, Steele, Dodge, Freeborn, and Mower Counties.

Table 12.—For items indicating use of various sources of information, consistency in the responses given by residents of a place and residents of all places,1994 and 1999[1]

	Correlation coefficients for consistency of response	
Place	1994	1999
All places	1.00	1.00
Wells Creek watershed	0.67	0.57
Bluffland counties[2]	0.99	1.00
Other counties[3]	0.98	0.99

[1] Table entries are correlation coefficients for the 14 information-source items, as measured by the percent of people using a source. All correlation coefficients in the table are significant at the 0.05 level (two-tailed test). A high correlation coefficient (close to 1.00) suggests no differences in responses given by residents of a place and residents of all places in that year.

[2] Bluffland counties include Goodhue (minus Wells Creek watershed residents), Wabasha, Olmstead, Winona, Fillmore, and Houston Counties.

[3] Other counties include Rice, Steele, Dodge, Freeborn, and Mower Counties.

Table 13.—For items indicating use of various sources of information, number of items where the change in the Wells Creek watershed between 1994 and 1999 was similar to changes in both, one, or none of the other two places[1]

Wells Creek watershed change	Number of items where the changes in use of the sources of information for Wells Creek were similar to... ...both other places[2]	...one other place	... no other place	Wells Creek changes
Sources showing a significant increase in use	0	0	0	0
Sources showing a significant decrease in use	0	0	1	1
Sources showing no significant change in use	9	4	0	13
Total	9	4	1	14

[1] To be considered "similar," the Wells Creek change and a place change must both be significant and in the same direction at the 0.05 level (two-tailed test), or both changes must be not significant at the 0.05 level.

[2] Other places include the bluffland counties (Goodhue minus Wells Creek watershed residents, Wabasha, Olmstead, Winona, Fillmore, and Houston Counties) and other counties (Rice, Steele, Dodge, Freeborn, and Mower Counties).

Table 14.—"If you have questions about land use and the environment there are many places you can turn to for information. Please look over the list below, and check the sources you've used to obtain information on land use and the environment." Comparison of problem severity means between 1994 and 1999 by place[1]

Concern and values	All places	Place		
		Wells Creek watershed	Bluffland counties[2]	Other counties[3]
Federal offices				
1999 percent using source	27	40	29	23
Change in usage: 1999 - 1994	-3	7	-2	-3
Significance of change (two-sided)	0.17	0.10	0.44	0.29
State offices				
1999 percent using source	38	37	39	37
Change in usage: 1999 - 1994	1	2	-2	6
Significance of change (two-sided)	0.54	0.66	0.58	0.07
County or township offices				
1999 percent using source	41	54	40	42
Change in usage: 1999 - 1994	4	3	5	4
Significance of change (two-sided)	0.03	0.54	0.15	0.24
Soil and Water Conservation District Offices				
1999 percent using source	24	50	21	29
Change in usage: 1999 - 1994	-4	1	-6	-2
Significance of change (two-sided)	0.02	0.82	0.04	0.62
Agricultural Extension Service				
1999 percent using source	32	52	33	31
Change in usage: 1999 - 1994	2	-3	6	-3
Significance of change (two-sided)	0.24	0.45	0.05	0.30
TV				
1999 percent using source	55	30	56	54
Change in usage: 1999 - 1994	1	-8	1	-1
Significance of change (two-sided)	0.77	0.04	0.69	0.90
Radio				
1999 percent using source	42	29	43	42
Change in usage: 1999 - 1994	-2	-2	1	-6
Significance of change (two-sided)	0.42	0.56	0.74	0.08

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(Table 14 continued)

Concern and values	All places	Place		
		Wells Creek watershed	Bluffland counties[2]	Other counties[3]
Newspapers				
1999 percent using source	66	54	67	65
Change in usage: 1999 - 1994	2	-2	2	2
Significance of change (two-sided)	0.28	0.64	0.51	0.49
Magazines				
1999 percent using source	47	47	47	47
Change in usage: 1999 - 1994	-3	-8	-2	-5
Significance of change (two-sided)	0.12	0.07	0.53	0.15
Conservation or environmental groups				
1999 percent using source	23	20	21	25
Change in usage: 1999 - 1994	-1	2	-2	0
Significance of change (two-sided)	0.44	0.67	0.41	0.96
Local civic groups				
1999 percent using source	10	9	9	12
Change in usage: 1999 - 1994	1	-1	0	3
Significance of change (two-sided)	0.42	0.58	0.95	0.25
Libraries				
1999 percent using source	21	12	21	22
Change in usage: 1999 - 1994	-2	-6	-3	-1
Significance of change (two-sided)	0.31	0.08	0.38	0.83
Family members				
1999 percent using source	39	29	38	39
Change in usage: 1999 - 1994	6	-7	4	9
Significance of change (two-sided)	0.00	0.10	0.20	0.01
Friends and other people				
1999 percent using source	55	44	56	54
Change in usage: 1999 - 1994	6	-3	7	5
Significance of change (two-sided)	0.00	0.56	0.04	0.12

[1] Shaded cells in the table denote a two-tailed significant change at the 0.05 level.
[2] Bluffland counties are Goodhue (minus Wells Creek watershed residents), Wabasha, Olmstead, Winona, Fillmore, and Houston Counties.
[3] Other counties include Rice, Steele, Dodge, Freeborn, and Mower Counties.

Table 15.—"There are many different things you can do to affect environmental quality and land use in your region. Please consider the list below and indicate all the actions you have taken to affect environmental quality and land use." Percent of responses shown by where respondents live and by place (location of residence), 1999.

		Where do you live?			Place		
I have...	Total	Farm	Rural non-farm	City or town	Wells Creek watershed	Bluffland counties[1]	Other counties[2]
campaigned for a candidate with views similar to mine.	12.8	15.2	14.5	11.8	15.1	12.0	13.9
voted for candidates with views similar to mine.	58.8	60.4	63.6	57.1	49.0	57.4	61.2
phoned or personally lobbied legislators or agency officials.	10.1	14.4	12.3	8.5	9.2	10.8	8.8
written letters to legislators or agency officials.	11.5	9.6	14.3	11.1	11.2	12.7	9.5
written letters to newspapers.	2.9	2.1	2.6	3.2	5.2	2.1	4.1
worked on regional or State panels or task forces.	2.3	2.4	3.8	1.8	3.6	1.9	2.9
taken part in community or local projects or activities.	21.8	24.3	23.2	20.9	24.7	21.4	22.4
gone to public meetings.	29.3	50.4	39.3	21.7	37.5	29.9	28.5
joined a conservation group.	12.0	8.0	18.4	10.9	12.4	10.1	14.9
collected signatures for a petition.	5.2	4.8	4.0	5.6	6.4	5.2	5.1
changed some things I do in my home.	67.4	67.0	72.1	66.0	60.6	69.2	64.4
changed some of the practices where I work.	35.1	35.3	37.3	34.3	29.1	34.1	36.1
changed the way I manage my land.	22.5	66.8	21.1	13.5	54.2	22.8	21.7
Other	3.9	3.2	3.6	4.2	5.6	4.2	3.4
I have not taken any specific action related to the environment.	17.8	8.6	14.7	20.7	10.0	15.8	21.5
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0

[1] Bluffland counties include Goodhue (minus Wells Creek watershed residents), Wabasha, Olmstead, Winona, Fillmore, and Houston Counties.

[2] Other counties include Rice, Steele, Dodge, Freeborn, and Mower Counties.

Table 16.—For items related to actions taken to affect environmental quality, consistency in the responses given by residents of a place in 1994 and 1999[1]

Place	Correlation coefficients for consistency of response
All places	0.99
Wells Creek watershed	0.99
Bluffland counties[2]	0.99
Other counties[3]	0.99

[1] Table entries are correlation coefficients for the 13 action items, as measured by the percent of people taking an action. All correlation coefficients in the table are significant at the 0.05 level (two-tailed test). A high correlation coefficient (close to 1.00) suggests no differences in responses given by residents of a place in 1994 and 1999.

[2] Bluffland counties include Goodhue (minus Wells Creek watershed residents), Wabasha, Olmstead, Winona, Fillmore, and Houston Counties.

[3] Other counties include Rice, Steele, Dodge, Freeborn, and Mower Counties

Table 17.—For items related to actions taken to affect environmental quality, consistency in the responses given by residents of a place and residents of all places, 1994 and 1999[1]

Place	Correlation coefficients for consistency of response	
	1994	1999
All places	1.00	1.00
Wells Creek watershed	0.91	0.88
Bluffland counties[2]	1.00	1.00
Other counties[3]	1.00	1.00

[1] Table entries are correlation coefficients for the 13 action items, as measured by the percent of people taking an action. All correlation coefficients in the table are significant at the 0.05 level (two-tailed test). A high correlation coefficient (close to 1.00) suggests no differences in responses given by residents of a place and residents of all places in that year.

[2] Bluffland counties include Goodhue (minus Wells Creek watershed residents), Wabasha, Olmstead, Winona, Fillmore, and Houston Counties.

[3] Other counties include Rice, Steele, Dodge, Freeborn, and Mower Counties.

Table 18.—For individual items, similarity in the change in actions taken between the Wells Creek watershed and the two neighboring places. Number of items where the change in the Wells Creek watershed between 1994 and 1999 was similar to changes in both, one, or none of the other two places.[1]

Wells Creek watershed change	Number of items where the changes in participation in the activity for Wells Creek were similar to... ...both other places[2]	...one other place	... no other place	Wells Creek changes
Activity showing a significant increase in participation	0	0	1	1
Activity showing a significant decrease in participation	0	0	0	0
Activity showing no significant change in participation	9	3	0	12
Total	9	3	1	13

[1] To be considered "similar," the Wells Creek change and a place change must both be significant and in the same direction at the 0.05 level (two-tailed test), or both changes must be not significant at the 0.05 level.

[2] Other places include the bluffland counties (Goodhue minus Wells Creek watershed residents, Wabasha, Olmstead, Winona, Fillmore, and Houston Counties) and other counties (Rice, Steele, Dodge, Freeborn, and Mower Counties).

Table 19.—"There are many different things you can do to affect environmental quality and land use in your region. Please consider the list below and indicate all of the actions you have taken to affect environmental quality and land use." Comparison of problem severity means between 1994 and 1999 by place.[1]

Action and values	All places	Place		
		Wells Creek watershed	Bluffland counties[2]	Other counties[3]
Campaigned for a candidate with views similar to mine.				
1999 percent taking action	13	15	12	14
Change in action taken: 1999 - 1994	2	6	1	4
Significance of change (two-sided)	0.12	0.03	0.66	0.07
Voted for candidates with views similar to mine.				
1999 percent taking action	59	49	57	61
Change in action taken: 1999 - 1994	3	-1	2	4
Significance of change (two-sided)	0.16	0.76	0.53	0.20
Phoned or personally lobbied legislators or agency officials.				
1999 percent taking action	10	9	11	9
Change in action taken: 1999 - 1994	1	-2	2	0
Significance of change (two-sided)	0.29	0.38	0.32	0.89
Written letters to legislators or public agency officials.				
1999 percent taking action	12	11	13	10
Change in action taken: 1999 - 1994	0	-4	1	-2
Significance of change (two-sided)	0.96	0.20	0.50	0.26
Written letters to newspapers.				
1999 percent taking action	3	5	2	4
Change in action taken: 1999 - 1994	0	1	-2	2
Significance of change (two-sided)	0.70	0.45	0.19	0.17
Worked on regional or State panels or task forces.				
1999 percent taking action	2	4	2	3
Change in action taken: 1999 - 1994	0	1	0	0
Significance of change (two-sided)	0.75	0.59	0.75	0.87
Taken part in community or local projects or activities.				
1999 percent taking action	22	25	21	22
Change in action taken: 1999 - 1994	1	1	0	1
Significance of change (two-sided)	0.79	0.77	0.92	0.77
Gone to public meetings.				
1999 percent taking action	29	38	30	29
Change in action taken: 1999 - 1994	5	1	6	4
Significance of change (two-sided)	0.00	0.75	0.04	0.18

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(Table 19 continued)

Action and values	All places	Place: Wells Creek watershed	Place: Bluffland counties[2]	Place: Other counties[3]
Joined a conservation group.				
1999 percent taking action	12	12	10	15
Change in action taken: 1999 - 1994	-3	-3	-5	0
Significance of change (two-sided)	0.06	0.39	0.04	0.89
Collected signatures for a petition.				
1999 percent taking action	5	6	5	5
Change in action taken: 1999 - 1994	1	1	0	2
Significance of change (two-sided)	0.60	0.56	0.81	0.18
Changed some things I do in my home.				
1999 percent taking action	67	61	69	64
Change in action taken: 1999 - 1994	-3	-7	-2	-5
Significance of change (two-sided)	0.14	0.10	0.60	0.13
Changed some of the practices where I work.				
1999 percent taking action	35	29	34	36
Change in action taken: 1999 - 1994	-3	-4	-3	-2
Significance of change (two-sided)	0.18	0.37	0.28	0.64
Changed the way I manage my land.				
1999 percent taking action	23	54	23	22
Change in action taken: 1999 - 1994	-6	-4	-7	-6
Significance of change (two-sided)	0.00	0.38	0.02	0.06
I have not taken any specific action related to the environment.				
1999 percent taking action	18	10	16	22
Change in action taken: 1999 - 1994	2	-3	0	4
Significance of change (two-sided)	0.26	0.30	0.88	0.11

[1] Shaded cells in the table denote a two-tailed significant change at the 0.05 level.

[2] Bluffland counties are Goodhue (minus Wells Creek watershed residents), Wabasha, Olmstead, Winona, Fillmore, and Houston Counties.

[3] Other counties include Rice, Steele, Dodge, Freeborn, and Mower Counties.

Table 20.—"Below are several statements that describe your relationship to the environment. Please indicate how much you agree or disagree with each statement." Percentages shown by where respondents live and by place (location of residence), 1999.

Statement and agreement	Total	Where do you live?			Place		
		Farm	Rural non-farm	City or town	Wells Creek watershed	Bluffland counties[1]	Other counties[2]
My quality of life depends on the health of the environment.							
Strongly disagree	0.9	2.1	1.2	.6	1.6	.9	.9
Mildly disagree	1.4	.0	.0	2.1	1.6	1.2	1.7
Neutral	4.3	7.9	1.8	4.3	4.7	4.0	4.7
Mildly agree	22.2	27.2	19.5	21.9	26.1	23.7	20.3
Strongly agree	68.7	61.8	77.0	67.7	64.4	67.7	70.0
Don't know	2.5	1.0	0.5	3.4	1.6	2.6	2.4
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0
An important step in maintaining environmental quality is to develop community goals for the environment in our region.							
Strongly disagree	1.7	4.5	1.4	1.2	1.6	1.7	1.7
Mildly disagree	2.1	2.9	3.1	1.7	6.0	2.4	1.7
Neutral	10.0	21.8	8.0	8.0	11.6	10.2	9.4
Mildly agree	30.7	33.0	35.2	28.8	34.5	31.0	30.8
Strongly agree	51.3	34.7	49.9	55.3	41.8	51.5	50.8
Don't know	4.2	3.1	2.4	5.0	4.4	3.3	5.6
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Public policies that influence land use and environmental quality should be developed by resource professionals with little input from citizens.							
Strongly disagree	62.3	67.9	66.9	59.7	71.9	64.9	58.2
Mildly disagree	19.9	16.0	21.5	20.3	15.8	19.4	20.8
Neutral	4.6	3.4	4.5	4.8	4.0	4.0	5.8
Mildly agree	5.7	5.3	2.6	6.8	2.8	5.6	5.8
Strongly agree	2.8	3.0	1.4	3.2	2.8	2.1	3.9
Don't know	4.6	4.4	3.1	5.1	2.8	4.0	5.6
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Sometimes it is OK to degrade the environment to promote economic development.							
Strongly disagree	40.5	37.9	49.6	38.3	43.7	39.2	42.0
Mildly disagree	26.3	25.4	20.0	28.4	26.6	26.8	25.4
Neutral	11.7	15.1	10.5	11.2	9.9	12.0	11.5
Mildly agree	13.2	15.8	13.7	12.4	12.7	14.3	11.8
Strongly agree	3.5	2.4	3.6	3.7	3.2	3.1	4.1
Don't know	5.0	3.4	2.6	6.0	4.0	4.7	5.3
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0

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(Table 20 continued)

Statement and agreement	Total	Where do you live?			Place		
		Farm	Rural non-farm	City or town	Wells Creek watershed	Bluffland counties[1]	Other counties[2]
A healthy economy depends on a healthy environment.							
Strongly disagree	2.4	5.8	4.0	1.2	1.2	2.6	2.2
Mildly disagree	4.5	5.0	4.1	4.5	4.4	4.0	5.5
Neutral	10.8	14.1	8.8	10.8	13.7	10.3	11.5
Mildly agree	32.5	36.9	35.2	30.7	30.6	35.3	27.6
Strongly agree	47.1	35.5	45.8	50.0	47.6	45.3	50.4
Don't know	2.7	2.7	2.1	2.9	2.4	2.6	2.9
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Cost should be an important consideration in making decisions on preserving rare plants and animals.							
Strongly disagree	13.6	12.0	13.1	14.1	10.8	13.8	13.5
Mildly disagree	19.4	16.9	20.4	19.7	13.9	18.3	21.6
Neutral	12.6	14.9	16.9	10.9	14.3	12.4	13.0
Mildly agree	32.8	31.2	29.9	34.0	34.3	35.1	29.1
Strongly agree	18.0	23.3	17.4	17.1	24.3	17.3	18.8
Don't know	3.5	1.7	2.4	4.2	2.4	3.0	4.1
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0
We should limit our development and use of the environment today so that future generations will have the resources they need to live.							
Strongly disagree	2.7	1.7	3.8	2.5	.8	3.5	1.7
Mildly disagree	4.4	9.3	2.9	3.9	5.6	4.2	4.7
Neutral	8.0	7.9	5.3	8.8	11.6	7.5	8.5
Mildly agree	28.3	30.4	27.2	28.3	26.9	29.9	26.2
Strongly agree	52.8	46.5	58.3	52.5	52.6	50.5	56.3
Don't know	3.8	4.2	2.6	4.0	2.4	4.4	2.6
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Conserving and restoring pre-European settlement plant communities should be an important goal of public land management agencies.							
Strongly disagree	5.2	10.8	6.2	3.8	13.2	5.4	4.9
Mildly disagree	12.9	19.1	15.3	10.9	14.8	13.1	12.6
Neutral	28.8	40.3	21.7	28.5	27.2	29.3	28.2
Mildly agree	20.5	7.7	24.7	21.9	18.4	20.8	19.9
Strongly agree	11.7	8.0	11.9	12.5	11.6	10.5	13.8
Don't know	20.8	14.2	20.2	2.4	14.8	20.8	20.6
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0

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(Table 20 continued)

Statement and agreement	Total	Where do you live?			Place		
		Farm	Rural non-farm	City or town	Wells Creek watershed	Bluffland counties[1]	Other counties[2]
Economic development activities in my region should focus on diversifying the economy.							
Strongly disagree	1.9	3.2	1.9	1.7	3.3	1.9	2.0
Mildly disagree	5.1	8.0	5.6	4.4	6.5	4.7	5.7
Neutral	26.3	26.9	29.4	25.3	28.5	27.2	25.1
Mildly agree	34.0	31.2	33.4	34.8	35.0	33.3	35.0
Strongly agree	16.7	13.7	17.0	17.3	16.7	16.3	17.5
Don't know	15.9	17.0	12.6	16.6	10.2	16.5	14.8
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0
When managing public lands, the economic health of my community should be given highest priority.							
Strongly disagree	8.3	5.1	9.8	8.6	9.6	9.1	6.9
Mildly disagree	22.5	17.0	20.8	24.2	17.9	24.5	19.2
Neutral	17.6	22.7	22.3	15.1	16.7	16.8	18.5
Mildly agree	24.6	23.6	21.8	25.7	32.3	23.8	26.4
Strongly agree	21.4	27.2	21.7	20.1	19.9	20.0	24.0
Don't know	5.5	4.4	3.6	6.4	3.6	5.8	5.0
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0
River flood plains should exist in a natural state, free of buildings or other structures.							
Strongly disagree	3.9	6.3	6.3	2.7	6.5	5.9	.7
Mildly disagree	8.6	13.2	7.5	7.9	14.9	9.0	7.7
Neutral	12.7	14.9	12.0	12.4	11.7	13.9	10.4
Mildly agree	30.5	28.6	30.3	30.9	27.8	31.4	29.1
Strongly agree	37.3	31.8	42.2	37.1	33.9	32.9	45.0
Don't know	7.0	5.2	1.7	9.0	5.2	6.9	7.0
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0
We should maintain or enhance the diversity of wildlife populations.							
Strongly disagree	1.4	3.1	.9	1.2	2.4	.9	2.2
Mildly disagree	3.6	7.7	5.3	2.2	6.5	3.8	3.1
Neutral	8.7	11.8	9.3	7.9	10.6	9.7	7.5
Mildly agree	37.9	37.2	34.6	39.0	40.7	38.5	36.3
Strongly agree	43.5	32.7	48.7	44.2	37.4	41.4	47.4
Don't know	4.9	7.6	1.2	5.5	2.4	5.7	3.6
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0

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(Table 20 continued)

Statement and agreement	Total	Where do you live?			Place		
		Farm	Rural non-farm	City or town	Wells Creek watershed	Bluffland counties[1]	Other counties[2]
Private landowners and public land managers currently work together effectively to protect the environment.							
Strongly disagree	7.4	9.1	6.3	7.4	7.9	7.0	8.6
Mildly disagree	22.4	18.6	26.4	22.0	21.4	22.7	22.1
Neutral	15.4	17.5	14.3	15.2	15.5	14.3	16.9
Mildly agree	24.1	31.2	25.8	22.1	34.1	25.7	21.1
Strongly agree	12.9	14.9	16.3	11.4	11.1	12.1	14.3
Don't know	17.8	8.8	10.8	21.8	9.9	18.2	17.1
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0
New residential development should be restricted to areas adjacent to existing urban centers.							
Strongly disagree	5.1	2.7	7.1	5.0	5.2	5.1	5.0
Mildly disagree	13.2	10.8	12.9	13.8	10.0	13.3	13.1
Neutral	17.5	19.9	17.0	17.1	16.3	19.1	15.3
Mildly agree	29.7	27.4	26.5	31.2	28.3	31.5	26.3
Strongly agree	27.6	35.2	31.0	25.0	35.5	24.5	32.7
Don't know	6.9	4.1	5.4	8.0	4.8	6.5	7.6
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0
We should maintain or enhance the diversity of natural plant communities.							
Strongly disagree	1.4	4.4	.5	1.1	2.0	.9	2.1
Mildly disagree	4.5	8.6	6.2	3.1	8.0	4.9	4.0
Neutral	18.9	27.7	21.7	16.1	22.3	19.4	17.6
Mildly agree	39.1	34.5	36.4	40.8	38.2	39.7	37.9
Strongly agree	27.6	16.8	27.9	29.8	21.9	27.1	28.6
don't know	8.6	8.0	7.3	9.2	7.6	7.9	9.8
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0

[1] Bluffland counties include Goodhue (minus Wells Creek watershed residents), Wabasha, Olmstead, Winona, Fillmore, and Houston Counties.

[2] Other counties include Rice, Steele, Dodge, Freeborn, and Mower Counties.

Table 21.—For items related to individual relationship to the environment, consistency in the responses given by residents of a place in 1994 and 1999[1]

Place	Correlation coefficients for consistency of response
All places	0.99
Wells Creek watershed	0.99
Bluffland counties[2]	0.99
Other counties[3]	0.99

[1] Table entries are correlation coefficients for the 15 "relation to environment and environmental management" items, as measured by the average level of agreement with the statement for each item. All correlation coefficients in the table are significant at the 0.05 level (two-tailed test). A high correlation coefficient (close to 1.00) suggests no differences in responses given by residents of a place in 1994 and 1999.

[2] Bluffland counties include Goodhue (minus Wells Creek watershed residents), Wabasha, Olmstead, Winona, Fillmore, and Houston Counties.

[3] Other counties include Rice, Steele, Dodge, Freeborn, and Mower Counties.

Table 22.—For items related to individual relationship to the environment, consistency in the responses given by residents of a place and residents of all places, 1994 and 1999[1]

	Correlation coefficients for consistency of response	
Place	1994	1999
All places	1.00	1.00
Wells Creek watershed	0.97	0.98
Bluffland counties[2]	1.00	1.00
Other counties[3]	1.00	1.00

[1] Table entries are correlation coefficients for the 15 "relation to environment and environmental management" items, as measured by the average level of agreement with the statement for each item. All correlation coefficients in the table are significant at the 0.05 level (two-tailed test). A high correlation coefficient (close to 1.00) suggests no differences in responses given by residents of a place in 1994 and 1999.

[2] Bluffland counties include Goodhue (minus Wells Creek watershed residents), Wabasha, Olmstead, Winona, Fillmore, and Houston Counties.

[3] Other counties include Rice, Steele, Dodge, Freeborn, and Mower Counties.

Table 23.— For items related to individual relationship to the environment, number of items where the change in the Wells Creek watershed between 1994 and 1999 was similar to changes in both, one, or none of the other two places[1]

Wells Creek watershed change	Number of items where the changes in agreement with the statement for Wells Creek were similar to... ...both other places[2]	...one other place	... no other place	Wells Creek changes
Items showing a significant increase in agreement	0	0	0	0
Items showing a significant decrease in agreement	0	0	1	1
Items showing no significant change in agreement	10	3	1	14
Total	10	3	2	15

[1] To be considered "similar," the Wells Creek change and a place change must both be significant and in the same direction at the 0.05 level (two-tailed test), or both changes must be not significant at the 0.05 level.

[2] Other places include the bluffland counties (Goodhue minus Wells Creek watershed residents, Wabasha, Olmstead, Winona, Fillmore, and Houston Counties) and other counties (Rice, Steele, Dodge, Freeborn, and Mower Counties).

Table 24.—"Below are several statements that describe your relationship to the environment. Please indicate how much you agree or disagree with each statement." Comparison of problem severity means between 1994 and 1999 by place.[1]

Statement and values	All places	Place: Wells Creek watershed	Place: Bluffland counties[2]	Place: Other counties[3]
My quality of life depends on the health of the environment.				
1999 mean 'agreement' value	4.60	4.53	4.60	4.61
Change in means: 1999 - 1994	0.09	0.01	0.10	0.08
Significance of change (two-tailed)	0.00	0.86	0.046	0.14
An important step in maintaining environmental quality is to develop community goals for the environment in our region.				
1999 mean 'agreement' value	4.34	4.14	4.33	4.35
Change in means: 1999 - 1994	0.02	0.05	0.04	-0.02
Significance of change (two-tailed)	0.68	0.57	0.53	0.74
Public policies that influence land use and environmental quality should be developed by public resource professionals with little input from citizens.				
1999 mean 'agreement' value	1.60	1.44	1.55	1.69
Change in means: 1999 - 1994	-0.02	-0.11	-0.13	0.15
Significance of change (two-tailed)	0.65	0.21	0.07	0.03
Sometimes it is OK to degrade the environment to promote economic development.				
1999 mean 'agreement' value	2.09	2.01	2.11	2.06
Change in means: 1999 - 1994	-0.03	-0.30	-0.04	-0.01
Significance of change (two-tailed)	0.57	0.01	0.61	0.93
A healthy economy depends on a healthy environment.				
1999 mean 'agreement' value	4.21	4.22	4.20	4.22
Change in means: 1999 - 1994	0.07	0.10	0.09	0.05
Significance of change (two-tailed)	0.09	0.24	0.21	0.46
Cost should be an important consideration in making decisions on preserving rare plants and animals.				
1999 mean 'agreement' value	3.22	3.49	3.25	3.19
Change in means: 1999 - 1994	-0.16	-0.05	-0.15	-0.17
Significance of change (two-tailed)	0.01	0.68	0.10	0.06
We should limit our development and use of the environment today so that future generations will have the resources they need to live.				
1999 mean 'agreement' value	4.29	4.28	4.25	4.34
Change in means: 1999 - 1994	0.01	0.15	-0.03	0.06
Significance of change (two-tailed)	0.88	0.08	0.63	0.32

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(Table 24 continued)

Statement and values	All places	Place: Wells Creek watershed	Place: Bluffland counties[2]	Place: Other counties[3]
Conserving and restoring pre-European settlement plant communities should be an important goal of public land management agencies.				
1999 mean 'agreement' value	3.26	3.00	3.23	3.32
Change in means: 1999 - 1994	0.14	0.20	0.18	0.08
Significance of change (two tailed)	0.01	0.08	0.03	0.34
Economic development activities in my region should focus on diversifying the economy.				
1999 mean 'agreement' value	3.70	3.62	3.69	3.71
Change in means: 1999 - 1994	-0.19	-0.03	-0.16	-0.22
Significance of change (two tailed)	0.00	0.72	0.01	0.00
When managing public lands, the economic health of my community should be given highest priority.				
1999 mean 'agreement' value	3.31	3.36	3.23	3.44
Change in means: 1999 - 1994	-0.09	-0.21	-0.09	-0.08
Significance of change (two-tailed)	0.11	0.05	0.30	0.37
River flood plains should exist in a natural state, free of buildings or other structures.				
1999 mean 'agreement' value	3.96	3.71	3.82	4.18
Change in means: 1999 - 1994	0.02	0.07	-0.01	0.06
Significance of change (two-tailed)	0.73	0.57	0.90	0.36
We should maintain or enhance the diversity of wildlife populations.				
1999 mean 'agreement' value	4.25	4.07	4.23	4.28
Change in means: 1999 - 1994	0.01	0.05	0.05	-0.05
Significance of change (two-tailed)	0.79	0.58	0.42	0.36
Private landowners and public land managers currently work together effectively to protect the environment.				
1999 mean 'agreement' value	3.15	3.21	3.16	3.13
Change in means: 1999 - 1994	0.09	0.18	0.14	0.03
Significance of change (two-tailed)	0.10	0.11	0.13	0.79
New residential development should be restricted to areas adjacent to existing urban centers.				
1999 mean 'agreement' value	3.66	3.83	3.61	3.74
Change in means: 1999 - 1994	0.06	-0.03	0.06	0.07
Significance of change (two-tailed)	0.21	0.80	0.44	0.42
We should maintain or enhance the diversity of natural plant communities.				
1999 mean 'agreement' value	3.95	3.76	3.95	3.96
Change in means: 1999 - 1994	0.07	0.15	0.11	0.02
Significance of change (two-tailed)	0.07	0.08	0.09	0.81

[1] Shaded cells in the table denote a two-tailed significant change at the 0.05 level.

[2] Bluffland counties are Goodhue (minus Wells Creek watershed residents), Wabasha, Olmstead, Winona, Fillmore, and Houston Counties.

[3] Other counties include Rice, Steele, Dodge, Freeborn, and Mower Counties

Table 25.—"Please consider each statement below and indicate whether you would like to see less, more, or about the same of each in your region." Percentages shown by where respondents live and by place (location of residence), 1999.

Landscape condition and preference for that condition	Total	Where do you live?			Place		
		Farm	Rural non-farm	City or town	Wells Creek watershed	Bluffland counties[1]	Other counties[2]
Area of natural cover, including forests, woodlands, prairies, and wetlands							
Want less	1.3	1.0	3.2	0.8	2.7	1.4	1.2
Want same	38.3	55.2	35.7	35.4	53.3	41.5	33.3
Want more	56.2	39.4	59.9	58.6	40.4	52.4	61.8
Don't know	4.2	4.3	1.1	5.2	3.5	4.8	3.7
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Area of new residential development in rural areas							
Want less	60.8	71.1	64.4	57.4	70.4	62.3	58.4
Want same	27.8	17.9	29.8	29.4	23.0	25.9	30.8
Want more	5.9	6.3	3.7	6.4	3.9	6.3	5.2
Don't know	5.5	4.7	2.1	6.8	2.7	5.6	5.6
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Area devoted to the protection of rare plant and animal species							
Want less	7.9	14.4	6.9	6.9	11.3	7.5	8.4
Want same	43.7	51.6	43.9	41.9	57.4	45.9	40.4
Want more	39.3	26.9	43.4	40.7	23.0	37.7	41.8
Don't know	9.1	7.1	5.7	10.5	8.2	8.9	9.3
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Area of pre-European settlement plant communities that are being conserved or have been restored							
Want less	9.0	11.6	11.9	7.5	14.1	9.6	8.1
Want same	40.7	48.5	38.2	39.7	46.7	39.4	42.3
Want more	23.4	13.5	24.4	25.3	15.7	24.3	22.3
Don't know	26.9	26.4	25.5	27.5	23.5	26.6	27.3
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Area of new light industrial development in rural areas							
Want less	42.3	39.2	46.1	41.8	50.8	41.7	43.3
Want same	34.3	28.2	34.6	35.6	28.1	33.9	34.7
Want more	14.5	22.9	13.9	12.9	10.9	15.3	13.3
Don't know	8.8	9.7	5.5	9.7	10.2	9.1	8.7
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Area of public land managed using techniques that attempt to imitate nature							
Want less	13.3	24.1	13.2	11.0	16.4	14.7	11.4
Want same	29.9	42.2	30.8	26.9	41.0	29.9	29.5
Want more	41.0	22.3	44.5	44.1	24.6	39.3	43.5
Don't know	15.8	11.4	11.5	18.1	18.0	16.1	15.7
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0

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(Table 25 continued)

Landscape condition and preference for that condition	Total	Where do you live?			Place		
		Farm	Rural non-farm	City or town	Wells Creek watershed	Bluffland counties[1]	Other counties[2]
Length of rivers or streams that have been straightened or channeled							
Want less	36.0	28.9	44.5	34.9	32.4	35.7	36.9
Want same	34.1	38.8	36.7	32.2	35.9	33.4	34.6
Want more	9.1	10.2	4.8	10.1	6.3	9.8	7.7
Don't know	20.9	22.1	14.0	22.8	25.4	21.1	20.8
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Area of wetlands that have been restored or conserved							
Want less	6.6	15.7	5.1	5.1	8.7	6.4	6.8
Want same	33.0	39.9	32.9	31.5	46.6	35.5	29.0
Want more	51.4	33.6	57.5	53.3	37.2	48.9	55.7
Don't know	9.0	10.8	4.4	10.0	7.5	9.3	8.5
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Number recreation areas devoted to non-motorized outdoor recreation							
Want less	9.4	13.0	12.6	7.6	10.6	10.5	7.4
Want same	36.3	48.1	30.2	35.6	45.5	35.5	37.9
Want more	48.9	33.7	53.1	50.9	35.3	49.2	48.1
Don't know	5.4	5.3	4.1	5.8	8.6	4.8	6.5
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Area of river flood plains that have been maintained or restored to their natural state, free of structures							
Want less	5.0	9.3	4.6	4.1	7.5	5.2	4.4
Want same	35.1	46.4	34.3	32.9	48.2	36.2	33.3
Want more	47.6	31.1	56.4	48.5	34.8	46.5	49.9
Don't know	12.3	13.2	4.6	14.5	9.5	12.1	12.4
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Areas in towns and cities planted to trees and shrubs							
Want less	0.9	0.0	2.3	0.6	2.4	0.9	1.2
Want same	23.4	31.9	21.2	22.3	31.0	22.3	25.9
Want more	73.1	65.7	75.8	73.8	62.0	73.6	71.3
Don't know	2.6	2.3	0.7	3.3	4.7	3.2	1.6
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Areas of forest devoted to supporting the local wood products industries							
Want less	21.9	15.1	22.3	23.2	13.0	21.4	22.7
Want same	40.1	50.1	40.0	38.0	49.8	42.4	36.7
Want more	26.1	24.4	30.6	25.1	27.3	24.8	28.3
Don't know	11.9	10.4	7.1	13.6	9.9	11.4	12.4
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0

[1] Bluffland counties include Goodhue (minus Wells Creek watershed residents), Wabasha, Olmstead, Winona, Fillmore, and Houston Counties.

[2] Other counties include Rice, Steele, Dodge, Freeborn, and Mower Counties.

Table 26.—For items related to the desirability of future conditions, consistency in the responses given by residents of a place in 1994 and 1999[1]

Place	Correlation coefficients for consistency of response
All places	0.99
Wells Creek watershed	0.99
Bluffland counties[2]	0.99
Other counties[3]	0.98

[1] Table entries are correlation coefficients for the 12 future-condition items, as measured by the average desire for more/less of a condition. A high correlation coefficient (close to 1.00) suggests no differences in responses given by residents of a place in 1994 and 1999.
[2] Bluffland counties include Goodhue (minus Wells Creek watershed residents), Wabasha, Olmstead, Winona, Fillmore, and Houston Counties.
[3] Other counties include Rice, Steele, Dodge, Freeborn, and Mower Counties.

Table 27.— For items related to the desirability of future conditions, consistency in the responses given by residents of a place and residents of all places, 1994 and 1999[1]

	Correlation coefficients for consistency of response	
Place	1994	1999
All places	1.00	1.00
Wells Creek watershed	0.96	0.97
Bluffland counties[2]	1.00	1.00
Other counties[3]	1.00	1.00

[1] Table entries are correlation coefficients for the 12 future-condition items, as measured by the average desire for more/less of a condition. A high correlation coefficient (close to 1.00) suggests no differences in responses given by residents of a place in 1994 and 1999.
[2] Bluffland counties include Goodhue (minus Wells Creek watershed residents), Wabasha, Olmstead, Winona, Fillmore, and Houston Counties.
[3] Other counties include Rice, Steele, Dodge, Freeborn, and Mower Counties.

Table 28.—For items related to the desirability of future conditions, number of items where the change in the Wells Creek watershed between 1994 and 1999 was similar to changes in both, one, or none of the other two places[1]

Wells Creek watershed change	Number of items where the changes in the preference for a landscape condition for Wells Creek were similar to... ...both other places[2]	...one other place	... no other place	Wells Creek changes
Items showing a significant increase in preference	0	0	0	0
Items showing a significant decrease in preference	0	0	0	0
Items showing no significant change in preference	8	4	0	12
Total	8	4	0	12

[1] To be considered "similar," the Wells Creek change and a place change must both be significant and in the same direction at the 0.05 level (two-tailed test), or both changes must be not significant at the 0.05 level.

[2] Other places include the bluffland counties (Goodhue minus Wells Creek watershed residents, Wabasha, Olmstead, Winona, Fillmore, and Houston Counties) and other counties (Rice, Steele, Dodge, Freeborn, and Mower Counties).

Table 29.—"Please consider each statement below and indicate whether you would like to see less, more, or about the same of each in your region." Comparison of problem severity means between 1994 and 1999 by place.[1]

Landscape characteristics and values	All places	Place		
		Wells Creek watershed	Bluffland counties[2]	Other counties[3]
Area of natural cover, including forests, woodlands, prairies, and wetlands				
1999 mean 'want more/less in future' value	2.57	2.39	2.54	2.63
Change in means: 1999 - 1994	0.00	0.07	0.00	0.01
Significance of change (two-tailed)	0.91	0.13	1.00	0.83
Area of new residential development in rural areas				
1999 mean 'want more/less in future' value	1.42	1.32	1.41	1.44
Change in means: 1999 - 1994	-0.05	-0.05	-0.06	-0.04
Significance of change (two-tailed)	0.04	0.27	0.14	0.36
Area devoted to the protection of rare plant and animal species				
1999 mean 'want more/less in future' value	2.34	2.13	2.33	2.37
Change in means: 1999 - 1994	0.05	0.01	0.06	0.05
Significance of change (two-tailed)	0.05	0.86	0.17	0.31
Area of pre-European settlement plant communities that are being conserved or have been restored				
1999 mean 'want more/less in future' value	2.20	2.02	2.20	2.20
Change in means: 1999 - 1994	0.12	0.09	0.14	0.08
Significance of change (two-tailed)	0.00	0.16	0.00	0.11
Area of new light industrial development in rural areas				
1999 mean 'want more/less in future' value	1.69	1.56	1.71	1.67
Change in means: 1999 - 1994	-0.08	-0.09	-0.03	-0.17
Significance of change (two-tailed)	0.01	0.18	0.59	0.00
Area of public land managed using techniques that attempt to imitate nature				
1999 mean 'want more/less in future' value	2.33	2.10	2.29	2.38
Change in means: 1999 - 1994	0.05	0.08	0.02	0.10
Significance of change (two-tailed)	0.15	0.23	0.75	0.07
Length of rivers or streams that have been straightened or channeled				
1999 mean 'want more/less in future' value	1.66	1.65	1.67	1.63
Change in means: 1999 - 1994	0.03	-0.04	0.04	0.00
Significance of change (two-tailed)	0.39	0.49	0.39	0.99
Area of wetlands that have been restored or conserved				
1999 mean 'want more/less in future' value	2.49	2.31	2.47	2.53
Change in means: 1999 - 1994	0.02	0.00	0.01	0.03
Significance of change (two-tailed)	0.55	0.94	0.82	0.52

(Continued on next page)

(Table 29 continued)

Landscape characteristics and values	All places	Place		
		Wells Creek watershed	Bluffland counties[2]	Other counties[3]
Number of recreation areas devoted to non-motorized outdoor recreation				
1999 mean 'future condition' value	2.42	2.27	2.41	2.44
Change in means: 1999 - 1994	-0.02	0.00	-0.05	0.01
Significance of change (two-tailed)	0.38	0.97	0.31	0.81
Area of river flood plains that have been maintained or restored to their natural state, free of structures				
1999 mean 'want more/less in future' value	2.49	2.30	2.47	2.52
Change in means: 1999 - 1994	0.01	0.01	0.02	-0.01
Significance of change (two-tailed)	0.67	0.88	0.56	0.78
Areas in towns and cities planted to trees and shrubs				
1999 mean 'want more/less in future' value	2.74	2.63	2.75	2.71
Change in means: 1999 - 1994	-0.04	-0.07	-0.02	-0.08
Significance of change (two-tailed)	0.02	0.14	0.46	0.01
Areas of forest devoted to supporting the local wood products industries				
1999 mean 'want more/less in future' value	2.05	2.16	2.04	2.06
Change in means: 1999 - 1994	-0.04	-0.03	0.00	-0.11
Significance of change (two-tailed)	0.20	0.68	0.99	0.04

[1] Shaded cells in the table denote a two-tailed significant change at the 0.05 level.
[2] Bluffland counties are Goodhue (minus Wells Creek watershed residents), Wabasha, Olmstead, Winona, Fillmore, and Houston Counties.
[3] Other counties include Rice, Steele, Dodge, Freeborn, and Mower Counties.

Table 30.—For all topics, number of items where the change in the Wells Creek watershed between 1994 and 1999 was similar to changes in both, one, or none of the other two places[1]

Wells Creek watershed change	Number of items where the changes in the preference for a response measure in Wells Creek were similar to... ...both other places[2]	...one other place	... no other place	Wells Creek changes
Items showing a significant change (increase or decrease) in the response measure	2	3	3	8
Items showing no significant change in response measure	41	16	4	61
Total	43	19	7	69

[1] To be considered "similar," the Wells Creek change and a place change must both be significant and in the same direction at the 0.05 level (two-tailed test), or both changes must be not significant at the 0.05 level.

[2] Other places include the bluffland counties (Goodhue minus Wells Creek watershed residents, Wabasha, Olmstead, Winona, Fillmore, and Houston Counties) and other counties (Rice, Steele, Dodge, Freeborn, and Mower Counties).

Table 31.—For the seven items where the changes in Wells Creek between 1994 and 1999 were significantly different from changes in the two neighboring regions, a description of the changes

Topic area/item	Change in Wells Creek	Change in other places[1]
Environmental and Land Use Concerns		
Frequency and extent of flooding	no change	decreases in severity for both
Soil erosion	no change	decreases in severity for both
Way in which public lands are managed	no change	decreases in severity for both
Sources of Information on Land Use and the Environment		
TV	decrease in use of source	no change for both
Actions Taken to Affect Environmental Quality and Land Use		
Campaigned for a candidate with views similar to mine	increase in action	no change for both
Relation to the Environment and Environmental Management		
Sometimes it is OK to degrade the environment to promote economic development	decrease in agreement	no change for both
Economic development activities in my region should focus on diversifying the economy	no change	decrease in agreement for both
Future Environmental Conditions People Desire		
(no items)		

[1] Other places include the bluffland counties (Goodhue minus Wells Creek watershed residents, Wabasha, Olmstead, Winona, Fillmore, and Houston Counties) and other counties (Rice, Steele, Dodge, Freeborn, and Mower Counties).

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Kelly, Tim; Sushak, Ron; Jakes, Pamela.
2001. **Changing people's perceptions and behavior through partnerships and education: followup on a case study from Minnesota**. Gen. Tech. Rep. NC-220. St. Paul, MN: U.S. Department of Agriculture, Forest Service, North Central Research Station. 61 p.

A follow-up survey of residents in southeastern Minnesota shows that environmental values were stable over a 5-year period. The authors were unable to measure any impacts of a Minnesota Department of Natural Resources comprehensive watershed planning initiative in the Wells Creek watershed on residents' behaviors and attitudes and perceptions about the environment.

KEY WORDS: Comprehensive watershed planning, ecosystem management, environmental values, public involvement.

Our job at the North Central Research Station is discovering and creating new knowledge and technology in the field of natural resources and conveying this information to the people who can use it. As a new generation of forests emerges in our region, managers are confronted with two unique challenges: (1) Dealing with the great diversity in composition, quality, and ownership of the forests, and (2) Reconciling the conflicting demands of the people who use them. Helping the forest manager meet these challenges while protecting the environment is what research at North Central is all about.